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ABSTRACT

Presenting a longitudinal study of factors influencing the text-forming strategies children employ in early stages of writing development, this report focuses on the differences between children's oral and written texts and the development of writing ability. The first two chapters present cohesion results, with the first chapter providing dictation and writing data for the grades 1 and 2 population and the second chapter presenting replication results comparing kindergarten-grade one and older population (grades 1-2) groups' cohesion in both dictation and writing. The third chapter discusses story structure results in terms of their theoretical significance and implications for writing development, while a fourth chapter integrates cohesion and story structure conclusions into an analysis of the transition to writing emphasizing patterns of development. Finally, the fifth chapter presents a case study of the development of a kindergarten child's writing abilities. Appendixes include (1) a description of study procedures, (2) cohesion MANOVAs by mode and grade for urban and suburban schools, (3) cohesion MANOVAs for school, mode and observation, (4) story structure MANOVAs in retelling dictation and writing at urban and suburban schools, and (5) a discussion of text length and syntactic complexity. (HOD)

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TRANSITION TO WRITING

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MLK VMR

Preface

Volume 1 of this series of longitudinal studies dealt with the contribution of a variety of factors which influence the text-forming strategies children employ in early stages of writing development. Constitutional, socioeconomic, and maturational factors were described which affected distributions of cohesive ties and the range, sustaining power, and complexity of their written stories. This volume focuses on differences between children's oral and written texts and on development of writing ability—in other words, on their transition to writing. Although the same constitutional, socioeconomic, and maturational variables are considered briefly, further analyses have not uncovered substantial new findings about these population characteristics. Readers of the present volume who wish to examine these differences in detail will find related analyses in Appendices B, C and D. Procedures may be found in Appendix A.

The present volume is organized as follows. Cohesion results are presented in the first two chapters. Chapter 1 extends Volume 1 by adding dictation and writing data for the Grade 1-2 population, Chapter 2 presents replication results for the kindergarten/grade-one groups compared with the older population (Grade 1-2) for cohesion in both dictation and writing.

Story structure results, as in Volume 1, are given in a separate chapter (3). For both cohesion and story structure major differences in speech and writing are discussed in terms of their theoretical significance and implications for writing development. In a fourth chapter, cohesion and story structure conclusions are integrated into an analysis of the transition to writing emphasizing patterns of development. Finally, a case study of a kindergarten child is presented in Chapter 4.

MLK VMR

Table of Contents

Chapter		Page
Acknowledgements		ii
Preface		iii
1	The Transition to Literacy MAKING MEANINGS EXPLICIT	1
	Contextual Factors	1
	Making Meanings Explicit in Writing	2
	Cohesion in Children's Oral and Written Texts: Summary Grade 1-2 Results	4
	Transition to Writing: From Dictation to Written Text Results for Grade 1-2	6
	Multivariate and Univariate Analyses	7
	Overview of Cohesion Results: Comparison of Dictated and Written Modes, Grade 1-2	8
	Results of MANOVA for Dictation and Writing	9
	Urban School Cohesion Results: Dictation and Writing	10
	Observation and mode factor follow-ups	15
	Dialect by mode interaction and dialect factor follow-up	16
	Sex factor follow-up	20
	Urban School Cohesion Results: Dictation Only	21
	Dialect by sex interaction follow-up	22
	Observation factor follow-up	24
	Suburban School Cohesion Results: Dictation and Writing	25
	Mode by observation interaction and observation follow-ups	26
	Sex by mode interaction follow-up in dictation and writing	29
	Suburban School Cohesion Results: Dictation Only	32
2	Kindergarten/Grade One Replication of the Transition from Speech to Writing	34
	Cohesion Results for Dictation and Writing: Replications (K-1/1-2)	35
	Urban School Cohesion Results for Dictation: Replication (K-1/1-2)	35
	Observation factor follow-up	38
	Urban School Cohesion Results for Writing: Replication (K-1/1-2)	40
	Grade by dialect interaction in writing at urban school	40
	Grade by sex interaction in writing at urban school (K-1/1-2)--follow-up	43
	Grade factor follow-up	47
	Dialect factor follow-up	47
	Observation factor follow-up	48
	Suburban School Cohesion Results for Dictation: Replication (K-1/1-2)	49
	Suburban School Cohesion Results for Writing: Replication (K-1/1-2)	50
	Grade by observation follow-up	53

Table of Contents (Continued)

Chapter		Page
2	Continued	
	Sex by observation follow-up	55
	Sex factor follow-up	57
	Observation factor follow-up	57
	Discussion of Cohesion Results	58
	The Transition to Writing: Mode and Grade Comparisons	58
	Restricted Exophoric Reference	59
	Reference	60
	Ellipsis	61
	Conjunction	62
	Lexical cohesion	63
3	The Transition to Writing: Story Structure for Grade 1-2	66
	Analysis of Story Structure Data	72
	Story Structure: Mode Comparisons	76
	Follow-Up ANOVAs For the Discourse Contexts Factor	79
	Follow-Ups ANOVAs for the Observation Factor	81
	Follow-Up ANOVAs for the Discourse Context by Observation Interaction	82
	The Retelling Context	83
	The Writing Context	84
	Follow-Up ANOVA on Functions	85
	Follow-Up ANOVA on Function Types	87
	Follow-Up ANOVA on Moves	87
	The Dictation Context	87
	Are Stories Relevant Production Models for Beginning Writers?	88
4	The Transition to Writing	94
	Developmental Aspects of the Transition to Writing	97
	Factors Contributing to Developmental Variation in the Transition to Writing	102
	School variation	103
	Sex variation	105
	Dialect/socio-economic status variation	105
	Longitudinal Studies of the Transition to Writing	107
5	Transition to Writing: A Case Study	112
	The Development of Text Cohesion	113
	Story Retelling	113
	Story Dictation	116
	Assigned Writing	117
	Summary	120
	The Development of Story Functions	121
	Story Retelling	121
	Story Dictation	122

Table of Contents (Continued)

Chapter		Page
5	Continued	
	Assigned Writing	122
	Summary	122
	Unassigned Writing	123
	Attitudes About Writing	123
	Context for Writing	124
	Conclusion	125
BIBLIOGRAPHY		127
Appendices:		
A	Procedures of the Study	131
B	Cohesion MANOVAs by Mode and Grade for Urban and Suburban Schools	155
C	Cohesion MANOVAs for School, Mode and Observation (K-1)	168
D	Story Structure MANOVAs in Retelling Dictation and Writing at Urban (K-1) and Suburban Schools (K-1)	190
E	Text Length and Syntactic Complexity	211
	Additional Appendices in Volume 1:	
	Modified-Retelling	

List of Tables

Table		Page
1	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) in Dictation and Writing at Urban School (1-2) by Mode and Observation	11
2	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) in Dictation at the Urban School (1-2) by Dialect and Sex	12
3	Cohesion MANOVA By Dialect, Sex, Mode,* and Observation for Urban School (1-2)	13
4	Discriminant Analysis and Univariate ANOVAs as Follow-up to Significant Mode by Observation Interaction in Cohesion MANOVA for Urban School (1-2)	14
5	Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Observation at Urban School (1-2)	16
6	Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Mode at Urban School (1-2	17
7	Discriminant Analysis and Univariate ANOVAs as Follow-up to Significant Dialect by Mode Interaction in Cohesion MANOVA for the Urban School (1-2)	17
8	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) at the Urban School (1-2) by Dialect and Mode	19
9	Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Dialect at Urban School (1-2)	20
10	Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Sex at Urban School (1-2)	21
11	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) at the Urban School (1-2) by Sex	21
12	Cohesion MANOVA in Dictation, by Dialect, Sex, and Observation, for Urban School (1-2)	22
13	Discriminant Analysis and Univariate ANOVAs as Follow-up to Significant Dialect by Sex Interaction in Cohesion MANOVA in Dictation for Urban School (1-2)	23
14	Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation for Observation at the Urban School (1-2)	24

List of Tables (cont.)

Table		Page
15	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) in Dictation at Urban School (1-2) by Observation	25
16	Cohesion MANOVA by Sex, Mode, and Observation in Dictation and Writing for Suburban School (1-2)	26
17	Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Mode by Observation Interaction at Suburban School (1-2)	27
18	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) at the Suburban School (1-2) by Mode and Observation	28
19	Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Observation at Suburban School (1-2)	29
20	Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Sex by Mode Interaction at Suburban School (1-2)	30
21	Means and Standard Deviations for Cohesion MANOVA by (Transformed Variables) by Sex and Mode in Dictation and Writing at Suburban School (1-2)	31
22	Cohesion MANOVA in Dictation by Sex and Observation for Suburban School (1-2)	32
23	Discriminant Analysis and Univariate ANOVAs in Dictation for Observation Factor at Suburban School (1-2)	33
24	Cohesion MANOVA by Grade, Dialect, Sex, and Observation in Dictation for Urban School (K-1/1-2)	36
25	Means and Standard Deviations of Cohesion MANOVA (Transormed Variables) in Dictation for Urban School (K-1/1-2)--by Grade and Observation	37
26	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Dictation for Observation Factor at Urban School (K-1/1-2)	38
27	Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Dictation for Grade by Observation Interaction at Urban School (K-1/1-2)	40
28	Cohesion MANOVA by Grade, Dialect, Sex, and Observation in Writing at Urban School (K-1/1-2)	41

List of Tables (cont.)

Table		Page
29	Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Grade by Dialect Interaction at Urban School (K-1/1-2)	42
30	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) on Writing for Urban School (K-1/1-2)--by Grade and Dialect	44
31	Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Grade by Sex Interaction at Urban School (K-1/1-2)	45
32	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) on Writing for Urban School (K-1/1-2)--by Grade and Sex	46
33	Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Grade Factor at Urban School (K-1/1-2)	47
34	Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Dialect Factor at Urban School (K-1/1-2)	48
35	Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation Factor at Urban School (K-1/1-2)	49
36	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) on Writing for Urban School (K-1/1-2)--by Observation	49
37	Cohesion MANOVA by Grade, Sex, and Observation in Dictation for the Suburban School (K-1/1-2)	50
38	Cohesion MANOVA by Grade, Sex, and Observation in Writing for the Suburban School (K-1/1-2)	51
39	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) in Dictation and Writing for Suburban School (K-1/1-2) by Grade, Mode, and Observation	52
40	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Grade by Observation at Suburban School (K-1/1-2)	53
41	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Sex by Observation Interaction at Suburban School (K-1/1-2)	55

List of Tables (cont.)

Table		Page
42	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Suburban School in Dictation and Writing (K-1/1-2) by Sex, Mode, and Observation	56
43	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Sex at Suburban School (K-1/1-2)	57
44	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation at Suburban School (K-1/1-2)	58
45	Two-Factor Repeated Measure Story Structure MANOVA by Discourse Contexts and Observations	78
46	Means and Standard Deviations of Functions, Function Types and Moves by Discourse Contexts and Observations	79
47	Follow-up Univariate ANOVAs on Functions, Function Types, and Moves by Discourse Contexts	80
48	Means and Standard Deviations of Functions, Function Types, and Moves by Observations	81
49	Follow-up Univariate ANOVA on Function Types by Observations	82
50	Story Structure MANOVA in Retelling Context by Observations	83
51	Means and Standard Deviations for Function Types in Retelling Context by Observations	84
52	Follow-up Univariate ANOVA in Retelling Context on Function Types by Observations	84
53	Story Structure MANOVA in Writing Context by Observation	85
54	Means and Standard Deviations of Functions, Function Types, and Moves in Writing Context by Observations	85
55	Follow-up Univariate ANOVAs on Functions, Function Types and Moves in Writing Context by Observation	86
56	Story Structure MANOVA in Dictation Context by Observations	87

List of Tables

APPENDIX A

Table		Page
1	ANOVA of Socio-Economic Class by School and Sex	137
2	Means and Standard Deviations of Socio-Economic Class by School and Sex	137
3	Number of Functions, Types, and Moves in Three Stories	152

APPENDIX B

1	Cohesion MANOVA by Grade, Dialect, Sex, Mode, and Observation in Dictation and Writing at Urban School (K-1/1-2)	157 & 158
2	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2)--by Grade, Dialect, and Mode	159
3	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) in Dictation and Writing for Urban School (K-1/1-2)--by Grade and Observation	160
4	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2)--by Grade and Mode	161
5	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2)--by Dialect and Mode	162
6	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2)--by Grade and Sex	163
7	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2)--by Mode and Observation	164
8	Cohesion MANOVA by Grade, Sex, Mode, and Observation in Dictation and Writing at Suburban School (K-1/1-2)	165
9	Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) in Dictation and Writing for Suburban School--by Grade and Observation	166
10	Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) in Dictation and Writing for Suburban School--by Grade, Sex, and Observation	167

List of Tables (cont.)

APPENDIX C

Table		Page
1	Cohesion MANOVA in Dictation and Writing by School, Sex, Mode, and Observation--(k-1)	173
2	Cohesion MANOVA in Dictation by School, Sex, and Observation--(K-1)	174
3	Cohesion MANOVA in Writing by School, Sex, and Observation--(K-1)	175
4	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for School by Sex by Observation--(K-1)	177
5	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation--(K-1)	177
6	Means and Standard Deviations of Cohesion Categories in Writing by School, Sex, and Observation--(K-1)	178
7	Cohesion MANOVA in Dictation and Writing by Dialect Sex, Mode, and Observation--at Urban School (K-1)	179
8	Cohesion MANOVA in Dictation by Dialect, Sex, and Observation--at the Urban School (L-1)	180
9	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Dictation for Observation at Urban School (K-1)	181
10	Means and Standard Deviations of Cohesion Categories by Mode and Observation at the Urban School (K-1)	182
11	Cohesion MANOVA by Dialect, Sex, and Observation in Writing for Urban School (K-1)	183
12	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Dialect at Urban School (K-1)	184
13	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation at Urban School (K-1)	184
14	Means and Standard Deviations of Cohesion Categories in Writing by Dialect at Urban School (K-1)	185
15	Cohesion MANOVA in Dictation and Writing by Sex, Mode, and Observation--Suburban School (K-1)	186

List of Tables (cont.)

APPENDIX C (cont.)

Table		Page
16	Cohesion MANOVA in Dictation by Sex and Observation at the Suburban School (K-1)	187
17	Cohesion MANOVA by Sex and Observation in Writing at Suburban School (K-1)	187
18	Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation at Suburban School (K-1)	188
19	Means and Standard Deviations of Cohesion Categories by Mode and Observation at the Suburban School (K-1)	189

APPENDIX D

1	Story Structure MANOVA in Dictation and Writing by Dialect, Mode and Observation at Urban School (K-1)	195
2	Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Mode Effect for Urban School (K-1)	196
3	Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Observation Effect for Urban School (K-1)	196
4	Means and Standard Deviations of Story Structure Data for Urban School by Mode and Observation	197
5	Story Structure MANOVA in Dictation by Dialect, Sex, and Observation--for Urban School (K-1)	198
6	Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Observation Effect in Dictation for Urban School (K-1)--Story Structure	199
7	Story Structure MANOVA in Writing by Dialect, Sex, and Observation--for Urban School (K-1)	200
8	Story Structure MANOVA in Retelling by Dialect, Sex, and Observation--for Urban School (K-1)	201
9	Means and Standard Deviations for Function Types and Functions at Urban School (K-1) by Dialect and Observation	202
10	Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Dialect by Observation Interaction in Retelling for Urban School (K-1)--Story Structure	203

List of Tables (cont.)

APPENDIX D (cont.)

Table		Page
11	Story Structure MANOVA by Sex, Mode, and Observation for Suburban School (K-1)--Dictation and Writing	205
12	Story Structure MANOVA in Dictation by Sex and Observation--for Suburban School (K-1)	206
13	Story Skructure MANOVA in Writing by Sex and Observation--Suburban School (K-1)	207
14	Story Structure MANOVA in Retelling by Sex and Observation--for Suburban School (K-1)	208
15	Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Observation Effect in Retelling for Suburban School (K-1)--Story Structure	209
16	Means and Standard Deviations of Story Structure Data in Retelling for Suburban School by Observation (K-1)	210

APPENDIX E

1	Means and Standard Deviations of Text Length in Dictation and Writing for both Schools (K-1)--by Mode and Observation	213
2	ANOVA of Text Length in Dictation and Writing by School, Sex, Mode, and Observation (K-1)	214
3	Means and Standard Deviations of Text Length in Dictation and Writing at Urban School (K-1)--by Sex, Mode and Observation	215
4	ANOVA of Text Length in Dictation and Writing at the Urban School--by Dialect, Sex, Mode, and Observation	216
5	Means and Standard Deviations of Text Length in Dictation and Writing by Sex, Mode, and Observation at Suburban School (K-1)	219
6	ANOVA of Text Length in Dictation and Writing at the Suburban School by Sex, Mode, and Observation (K-1)	220
7	ANOVA of Text Length in Dictation by School, Sex, and Observation (K-1)	222
8	ANOVA of Text Length in Dictation by Dialect, Sex, and Observation at the Urban School (K-1)	223

List of Tables (cont.)

APPENDIX E

Table		Page
9	ANOVA of Text Length in Dictation at Suburban School (K-1) by Sex and Observation	224
10	ANOVA of Syntactic Complexity in Dictation and Writing by School, Sex, Mode, and Observation (K-1)	225
11	Means and Standard Deviations of Syntactic Complexity in Dictation and Writing by School, Sex and Observation (K-1)	226
12	Means and Standard Deviations of Syntactic Complexity (K-1)--by Mode and Observation	229
13	ANOVA of Syntactic Complexity in Dictation and Writing at the Urban School (K-1) by Dialect, Sex, Mode, and Observation	230
14	Means and Standard Deviations of Syntactic Complexity in Dictation and Writing at Urban School (K-1) by Dialect and Sex	231
15	Means and Standard Deviations of Syntactic Complexity in Dictation and Writing at Urban School (K-1) by Observation	232
16	ANOVA of Syntactic Complexity in Dictation and Writing at Suburban School by Sex, Mode, and Observation (K-1)	233
17	Means and Standard Deviations of Syntactic Complexity in Dictation and Writing by Sex, Mode, and Observation at Suburban School (K-1)	234

List of Figures

Figure		Page
1	Observation as a Function of Mode for Restricted Exophoric Reference, Conjunction, and Lexical Cohesion at Urban School (1-2)	14
2	Dictation and Writing as a Function of Dialect at Urban School (1-2)	18
3	Reference and Conjunction as a Function of Dialect in Dictation at Urban School (1-2)	24
4	Lexical Cohesion and Reference in Dictation and Writing as a Function of Observation (1-2)	27
5	Ellipsis as a Function of Sex in Dictation and Writing at Suburban School (1-2)	30
6	Observation as a Function of Grade in Dictation at Urban School (K-1/1-2)	39
7	Dialect as a Function of Grade for Ellipsis and Lexical Cohesion in Writing for Urban School (K-1/1-2)	42
8	Observation as a Function of Grade for Restricted Exophoric Reference, Reference, Ellipsis, Conjunction, and Lexical Cohesion in Writing at Suburban School (K-1/1-2)	54
9	Observation as a Function of Sex for Reference in Writing at Suburban School (K-1/1-2)	55
10	Retelling of Squawk to the Moon Little Goose	113
11	Retelling of The Magic Porridge Pot	114
12	Retelling of Salt	115
13	Dictation: Spring-Kindergarten; Spring-Grade One	116
14	Dictation: Autumn-Grade One	117
15	Writing: Spring-Kindergarten	118
16	Writing: Autumn-Grade One	119
17	Writing: Spring-Grade One	120

List of Figures (cont.)

Figure		Page
A 1	Notational System for Editing Oral Language Transcripts	144
A 2	Cohesion Multivariate Analyses of Variance	146
C 1	Observation as a Function of Sex and School for School by Sex by Observation Interaction in Retelling (K-1)	176
D 1	Observation as a Function of Dialect at Urban School (K-1) for Function Types and Functions	204
E 1	Observation as a Function of Sex and Mode on Text Length for Urban School (K-1)	217
E 2	Mode as a Function of Sex on Text Length for Suburban School (K-1)	221
E 3	Observation as a Function of Sex and School in Dictation and Writing (K-1)	227
E 4	Mode as a Function of Observation in Dictation and Writing (K-1)	229
E 5	Dialect as a Function of Sex in Dictation and Writing at Urban School (K-1)	231
E 6	Mode as a Function of Observation at Urban School (K-1)	232

Chapter 1

The Transition to Literacy

MAKING MEANINGS EXPLICIT

Contextual Factors

By school age, children are skilled, if not expert speakers. They have learned to use language as a functional extension of mind and self, largely within familiar, intimate, face-to-face situations where language may even be ancillary to on-going actions (Bruner, 1975; MacNamara, 1972). The purpose of these actions, the nature of the situation and its participants, and the social setting itself are subtle natural conditions which children have learned to interpret and address when they speak (Halliday, 1978). They have learned that the situation itself is part of the meaning they must understand and convey.

The situation may serve as the impetus for much of what is said. From the nature of the activity and those who participate in it, various kinds of discourse are required. Interpersonal relations must be maintained. Necessary information must be provided to solve problems or accomplish tasks. Cooperation may be needed to maintain or complete the activity and, of course, differences may arise among participants at any juncture where motives or preferences differ. All of these and many other factors support and sustain spoken discourse.

In most contexts where speech is applicable, participants in the discourse usually share a wide range of knowledge about the situation and about each other. This shared knowledge allows speakers to refer to objects, actions, states, and persons using a range of communicative capabilities. They may

point physically, or by the very nature of shared attention to the task at hand, they may simply rely on the perceptual salience of the activity to carry the burden of reference. Some social activities symbolize rich cultural meanings shared implicitly by members of the culture. Other activities symbolize deeply personal meanings shared by just two people. In either case speech may be ancillary to action or even ancillary to nonverbal meanings conveyed by the situation. In either case, context permits both verbal and nonverbal transmission of a range of meanings from highly implicit to highly explicit (Hasan, In press). Children, as participants, have learned to use the varied codes that mediate meaning in a context of situation, each code overlapping to some extent, but each code uniquely suited to convey certain kinds of meanings (Argyle and Kendon, 1967). They have learned to talk using the sum of these available codes, each adapted to accompany and interact with the others, speech included. Speech is part of this tapestry of meanings.

Making Meanings Explicit in Writing

In writing, where the text itself is the relevant environment for establishing all meaning relations, both attention and intention must be realigned. Unlike speech, where attention may be directed always to intention and context, attention must be directed as well to means and the form of language (Cazden, 1974). To free their language from situational constraints, children must understand that the text itself is the relevant environment for establishing meaning relations and learn also the unique features of written texts (Hasan, 1973; Pettigrew, 1981). They must learn to make meanings clear within a text and to direct language to a distant, often abstract audience (Donaldson, 1978; Francis, 1975). What children learning to write must grasp is how to take what is implicitly obvious in context-of-situation and make it explicit in written text (Cook-Gumperz, 1977). They must learn to

appreciate language as a structure separate from action, placing increased reliance on syntactic and semantic "foregrounding" as dominant carriers of meaning--in short, to substitute words and syntax for gesture, prosodic information, attributes of the discourse setting and all the redundant sources of meaning inherent in conversation (Cook-Gumperz, 1977; Doughty, Pearce & Thornton, 1972; Ure, 1971).

Children also must learn the functions of written discourse. A most important distinction between speech and writing can be made on the basis of function (Halliday, 1973). Halliday argues that spoken language essentially has an interpersonal function. Spoken language is used predominantly to maintain social relations. Written language mainly serves an ideational function. This function manifests language's capacity to express the content of experiences and their logical relationships. Olson (1977) also distinguishes between utterance and text. He, like Halliday, makes this distinction on the basis of function. Olson argues that utterances serve largely to maintain social relations while texts specify truth functions. Utterances have many implicit dimensions but texts are explicit: they explain and describe rather than regulate and maintain social relations. Texts are statements coded for reflection rather than for action. Halliday (1973) has defined this specialized character of texts as language's textual function. In writing, children must attend not only to ideas, but how ideas are expressed - the textual function.

Texts, (stories, poems, arguments, explanations) are units of meaning encoded in sentences (Halliday & Hasan, 1976). Texts have meaning within themselves and in relation to the context of which they are a part. The production of a text is shaped by a setting of relevant actions and events, by relationships among participants in a discourse, and by the mode of

communication employed. Texts are internally consistent; they comprise a kind of unity. This integration or unity of meaning is achieved by the way certain linguistic elements are used. Halliday and Hasan (1976) have shown how this unity is achieved through cohesion: that is, by establishing semantic relations through interpretive elements in a text. Cohesion is the range of these interpretive relations or ties. Ties are achieved through five distinct kinds of cohesive relations: reference, substitution, ellipsis, conjunction, and lexical cohesion (Halliday & Hasan, 1976; King & Rentel, et al., 1981). Another task children must accomplish in learning to write is to realign their use of cohesive ties to create texts which stand independent of contextual props, yet maintain a unity of meaning.

COHESION IN CHILDREN'S ORAL and WRITTEN TEXTS: SUMMARY GRADE 1-2 RESULTS

This report is the second of two designed to explore the kinds of shifts in language usage children must make as they move from oral to written discourse. In the first study which began with children midway through first grade, we found that over the first 16 months of the study, from February of first grade through all of second grade, children increased their use of lexical cohesion dramatically irrespective of social or linguistic background. On the average, children increased the proportion of lexical cohesion in writing from roughly 18 percent to nearly 50 percent of cohesive ties employed. In addition to lexical cohesion, children used conjunctions proportionately more, and used a wider range of them, adding approximately five percent more conjunctions to their texts every four months. Words were used to link meanings both at the level of proposition, and at higher levels of schema. For example, propositions were linked in beginning texts, like the one that follows, by additive conjunctions, repeating words and using synonyms. Note also that in line (3), the ultimate referent for they lies outside the text,

but in (2), they refers back to bombers.

(1) Once there were these bombers.
(2) And they tried to destroy this bridge.
(3) And they had airplanes and bombers.

Such use of reference, both exophoric and endophoric, reference outside and within the text, marked children's early productions. About 34 percent of the total ties in children's beginning texts referred to something or someone outside the text, but this percentage declined swiftly to three percent by the second month of grade two and remained at that level throughout the year. Thus, children, regardless of class, sex, dialect, or school increasingly confined reference ties to their texts. Both substitution and ellipsis were employed sparingly.

These overall developmental differences in use of cohesion are illustrated by the text below. This excerpted text is from a sample of writing collected at the end of second grade. The excerpts are from a much longer text but are presented with intervening units omitted to convey a sense of how various cohesive devices are employed over large spans of text to link presupposed meanings.

(1) Once there was a little hamster named Dancer.

(8) Dancer ran all around the house.
(9) Then someone opened the door.
(10) She skitter-skattered out of the house.

(14) When she was outside, she made lots of friends.

(18) Toby, the tomcat, was her best friend.
(19) She met Bom Bom, the bird, and Tommy, the tiger.

First, there are the lexical ties: around, out, outside (collocation); house, door (meronymy or part-whole relationships); ran, skitter-skattered (synonymy); friends, friend (reiteration); and tomcat, bird, tiger (hyponymy or co-classification). The conjunctions then and when, both temporals, have replaced and,

an additive conjunction, as means of linking grammatical units. The pronouns she and her refer consistently within the text to Dancer, the hamster.

Children appear to have discovered the versatility of lexical ties as a means for establishing textual relevance through synonyms, antonyms, hyponyms, meronyms, and reiteration. Coupled with their dramatic increase in the ability to establish identity of reference within a text, at the end of second grade, children tied schemata together with relations of identity and similarity. Decreases in exophoric reference indicate that they understood that the text must be the relevant environment for all meaning relations. Lexical cohesion, conjunction, and reference were used also to link adjacent propositions. And, as evidenced by the enormous increase in lexical cohesion evidenced in their texts, children clearly grew in their ability to establish relations at the level of categories. By the end of second grade, they had acquired a wide range of cohesive devices and a reasonably well organized set of systematic options for using them. Their reference ties were routinely endophoric. They employed substitution and ellipsis infrequently, while, conversely, they were unhesitant in their use of conjunction. In short, so far as cohesion is concerned, their transition from oral to written texts, while not complete, was well under way by the end of second grade with few initial differences remaining among populations.

TRANSITION TO WRITING: FROM DICTATION TO WRITTEN TEXT RESULTS FOR GRADE 1-2

A major concern in our research was to better understand how certain features of text (e.g. cohesion) develop in stories produced orally as compared with those produced in writing. That is, do children cope with certain elements in oral texts, where they are free of the mechanics of producing visual language, earlier than they do in writing? Are there particular shifts in the proportional use of cohesive devices in one mode

that differ from those in the other? To pursue these concerns, children's cohesive ties in dictated and written stories were compared using both multivariate and univariate analyses. Details of the statistical analyses and over all design strategy are described next, followed by an overview of the results for cohesion elements in dictation and writing.

Multivariate and Univariate Analyses

Both multivariate and univariate analyses of variance coupled with discriminant analysis were employed for the cohesion comparisons. For the multivariate and discriminant analyses, computer program CANOVA (Clyde Computing Services, 1973) was used. This program tests for significant differences with Wilk's likelihood ration transformed to Rao's approximate F. Significant multivariate differences were followed up with discriminant analyses and univariate analyses of variance. Arcsine-transformed proportions of restricted exophoric reference, reference, substitution, conjunction, and lexical ties served as dependent variables in a variety of complementary multivariate analyses wherein scores for each dependent variable were well-organized into mixed design with sex (6 males and 6 females) and dialect (6 vernacular and 6 nonvernacular) serving as between-subjects comparisons, and with discourse contexts (dictation and writing) and observation periods (Spring, 1979; Fall, 1979; and Spring, 1980) serving as within-subjects comparisons. This design compared factors within the urban school. Similar design arrangements were employed to compare urban and suburban schools but with the dialect comparison removed and the school factor substituted as a between-subjects comparison. A third multivariate analysis was employed to compare sex (between-subjects) and mode over observations (within-subjects). Additionally, multivariate analyses were performed on each mode separately retaining the same design characteristics for comparisons within and between

schools. Detailed descriptions of procedures and findings are given in Appendix A.

Essentially, the overall design strategy employed for all comparisons was to consider, first, the most comprehensive model possible within the limits of the assumption of sphericity (Davidson, 1980). Subsequent complementary comparisons, premised on discriminant and univariate follow-ups for the comprehensive model, were designed to progress through a descending order of less comprehensive, multivariate-univariate, interaction-main-effect probes till baseline effects were established.

Overview of Cohesion Results: Comparison of Dictated and Written Modes, Grade 1-2

Results from the urban school showed that in writing, use of conjunction and lexical cohesion increased during grades one and two, while in dictation, use of conjunction was stable over the period and lexical cohesion declined between first and second grade. In both dictation and writing, restricted exophoric reference declined with greater decreases occurring in writing. Both dialect groups used conjunction and lexical cohesion more in dictation than in writing; vernacular speakers made less use of reference in writing than in dictation while the opposite held for nonvernacular speakers. In general, nonvernacular speakers used more ellipsis, reference and conjunction in their texts overall than did vernacular speakers. The greatest differences over the period appeared to occur in declining use of restricted exophoric reference.

Follow-up techniques for the suburban school indicated that differences over observations were associated with writing--reference decreasing over observations while lexical cohesion and conjunction increased over the 16-month period. Males employed lexical cohesion and ellipsis more in dictation than

in writing while the reverse was true for females. Both males and females used conjunction less in writing than in dictation.

With the exception of restricted exophoric reference, proportions of cohesive ties remained relatively stable over observations in the dictation context. In writing, however, substantial developmental shifts occurred in lexical cohesion, reference, conjunction, and ellipsis. These writing differences were described extensively in Volume 1. Restricted exophoric reference decreased significantly in both writing and dictation. The stability of cohesion proportions over the period in dictation suggests an accomodation to context. On the other hand, cohesion proportions in writing reflect significant and surprisingly swift developmental realignment to the explicit requirements of written texts through increased lexicalization, endophoric reference, and semantic foregrounding.

Results of MANOVA for Dictation and Writing

Retellings were excluded from these analyses to obtain comparisons of children's original productions only. These productions ranged from labels and statements, to statements with comments, through reports and personal accounts to fictional tales. Each text, however, represented a version of what a particular child regarded as a story. To have compared these texts with children's retellings would have clouded interpretation of mode differences--assuming there is a relationship between genre and the use of cohesive ties--for, of course, retellings consistently resulted in stories.

The first MANOVA analyzed cohesion data from the urban school. Dialect and sex were between-subjects factors and mode and observation were within-subjects factors. Table 1 displays the means and standard deviations for the cohesion proportions from the urban school by mode and observation.

The second MANOVA analyzed cohesion data for the dictation context alone at the urban school. The between-subjects factors in this analysis remained dialect and sex with observation the within-subjects factor. Means and standard deviations for cohesion proportions are presented in Table 2.

A third MANOVA analyzed cohesion data from the suburban school. Sex was the between-subjects factor while mode and observation were within-subjects factors. Table 18 displays the means and standard deviations for the cohesion proportions from the suburban school.

The fourth MANOVA analyzed cohesion proportions for dictation only at the suburban school. These means and standard deviations are available in Table 18.

Urban School Cohesion Results: Dictation and Writing

Results from the MANOVA on urban school cohesion proportions (see Table 3) indicated a significant multivariate test statistic for the main effects of dialect, sex, mode, and observation. Significant interaction effects were indicated for mode X observation and dialect X mode.

Table 3 shows a significant Wilk's lambda criterion for a first-order interaction of mode and observation: F (10, 72) = 3.42, p.< .001. Note that after removing effects associated with the leading root, no signifieant discrimination remains. To determine the nature and source of this interaction, a discriminant analysis was performed which yielded standard discriminant weights. Discriminant weights along with univariate significance tests (ANOVA) on each of the five cohesion proportions are presented in Table 4.

Taken together, these follow-up techniques indicate that the best discriminators for the mode by observation, first-order interaction were conjunction, lexical cohesion and restricted exophoric reference. These first-order interactions are graphed in Figure 1.

Table 1

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) in Dictation and Writing at Urban School (1-2) by Mode and Observation

Mode	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
Dictation	1	.07	.09	.36	.12	.01	.02	.18	.07	.40	.09
	2	.02	.02	.45	.13	.03	.04	.20	.10	.33	.08
	3	.02	.02	.47	.19	.02	.02	.18	.09	.35	.10
Writing	1	.34	.52	.31	.38	.02	.06	.04	.08	.14	.18
	2	.03	.07	.35	.28	.02	.03	.10	.10	.29	.24
	3	.05	.10	.39	.21	.03	.06	.15	.12	.37	.16
Observation Means	1	.21	.39	.34	.28	.01	.04	.11	.10	.27	.19
	2	.02	.05	.40	.22	.02	.04	.15	.11	.31	.17
	3	.04	.07	.43	.20	.02	.05	.17	.11	.36	.13

Table 2

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) in Dictation at the Urban School (1-2) by Dialect and Sex

Dialect	Sex	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
Vernacular	Males	.07	.10	.36	.16	.01	.04	.22	.08	.35	.28
	Females	.03	.04	.53	.22	.02	.03	.13	.13	.33	.10
Nonvernacular	Males	.03	.04	.43	.05	.01	.01	.19	.07	.37	.08
	Females	.02	.02	.39	.08	.02	.03	.21	.05	.39	.09

Table 3

Cohesion MANOVA By Dialect, Sex, Mode,* and Observation
for Urban School (1-2)

Source	df	dfHYP	dfERR	F	p<
Between Subjects	23				
Dialect (A)	1	5.00	16.00	3.95	.016
Sex (B)	1	5.00	16.00	3.01	.042
Dialect X Sex (AB)	1	5.00	16.00	1.32	.304
S/AB	20				
Within Subjects	120				
Mode (C)	1	5.00	16.00	12.66	.001
Dialect X Mode (AC)	1	5.00	16.00	6.01	.003
Sex X Mode (BC)	1	5.00	16.00	2.17	.109
Dialect X Sex X Mode (ABC)	1	5.00	16.00	.88	.515
SC/AB	20				
Observation (D)	2	10.00	72.00	3.35	.001
		4.00	36.50	1.01	.414
Dialect X Observation (AD)	2	10.00	72.00	.65	.764
		4.00	36.50	.61	.655
Sex X Observation (BD)	2	10.00	72.00	1.54	.144
		4.00	36.50	.59	.674
Dialect X Sex X Observation (ABD)	2	10.00	72.00	1.20	.307
		4.00	36.50	.21	.933
SD/AB	40				
Mode X Observation (CD)	2	10.00	72.00	3.42	.001
		4.00	36.50	1.50	.223
Dialect X Mode X Observation (ACD)	2	10.00	72.00	.35	.964
		4.00	36.50	.35	.842
Sex X Mode X Observation (BCD)	2	10.00	72.00	.60	.812
		4.00	36.50	.15	.960
Dialect X Sex X Mode X Observation (ABCD)	2	10.00	72.00	.67	.753
		4.00	36.50	.48	.749
SCD/AB	40				
TOTAL	143				

* Dictation and Writing Modes Only

Table 4

Discriminant Analysis and Univariate ANOVAs as Follow-up to Significant Mode by Observation Interaction in Cohesion MANOVA for Urban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 40)	p.<
Restricted Exophoric Reference	.606	5.49	.008
Reference	.330	.20	.821
Ellipsis	.260	.80	.46
Conjunction	- .171	5.12	.011
Lexical Cohesion	- .703	10.27	.001

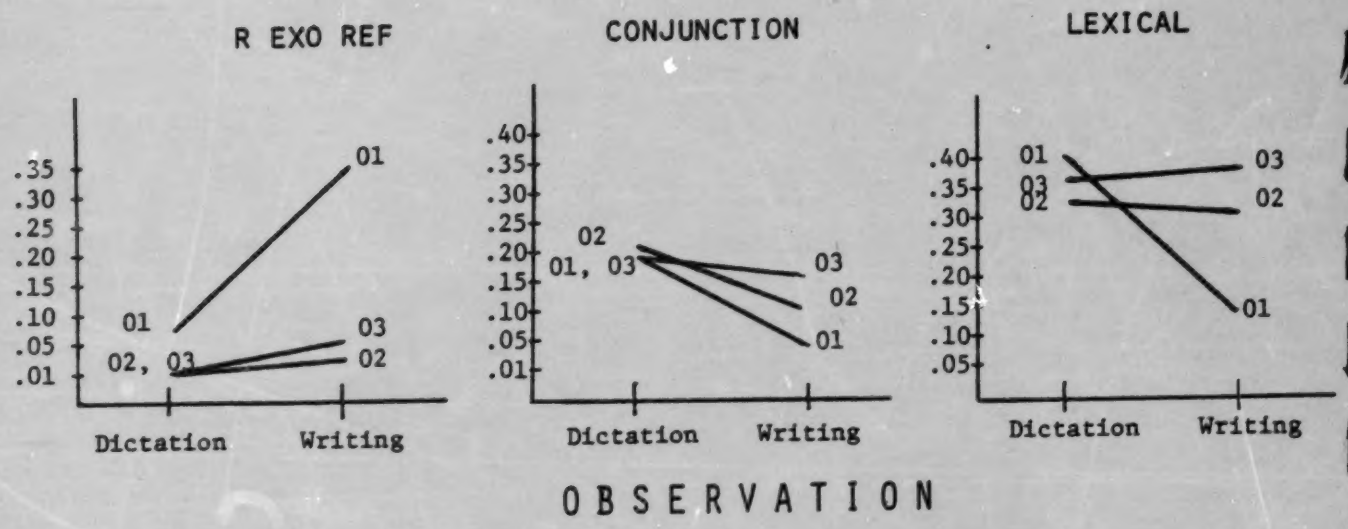

Figure 1. Observation as a Function of Mode for Restricted Exophoric Reference, Conjunction, and Lexical Cohesion at Urban School (1-2)

Mean differences (see Table 1), patterned as shown in Figure 1, indicate that in dictation, conjunction proportions were stable over observations (.18, .20, .18) while small decreases occurred in lexical cohesion (.40, .33, .35) and in restricted exophoric reference (.07, .02, .02). But in writing, large increases occurred in conjunction proportions (.04, .10, .15) and in lexical cohesion proportions (.14, .29, .37). Restricted exophoric reference proportions dropped steeply in writing (.34, .03, .05). As suggested by the standard discriminant function coefficients in Table 4, lexical cohesion proportions and restricted exophoric reference proportions appear to contribute most substantially to the interaction; however, additional follow-up analyses indicated a large contribution from conjunction as well. Interpretations based on standard discriminant function coefficients are somewhat risky because of the possible suppression. Separate follow-up multivariate analyses (MANOVA) of cohesion proportions in dictation, to be presented shortly, and in writing indicated a larger role for conjunction in writing but little contribution to the discrimination among observations in dictation.

Observation and mode factor follow-ups. The significant multivariate test statistic for the observation factor (see Table 3): F (10, 72) = 3.35, $p. < .001$, will be examined. As shown in Table 5, the best discriminators for observation differences, in order of decreasing importance were conjunction, restricted exophoric reference and lexical cohesion. Considered in terms of the significant multivariate test statistic for mode (see Table 3): F (5, 16) = 12.66, $p. < .001$, in order of decreasing contribution, the best discriminators for mode, as shown in Table 6, were: conjunction, lexical cohesion and restricted exophoric reference. Thus, while conjunction contributed less to the interaction between mode and observation, its contribution to both the discrimination for observation and for mode was large. Mean

Table 5

Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Observation at Urban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 40)	p.<
Restricted Exophoric Reference	.529	10.66	.001
Reference	-.307	2.12	.13
Ellipsis	-.265	.66	.52
Conjunction	-.568	4.96	.01
Lexical Cohesion	-.385	4.40	.02

differences in Table 1 for the observation factor show an increase in conjunction proportions (.11, .15, .17), and lexical cohesion proportions (.27, .31, .36) and a decrease in proportions of restricted exophoric reference (.21, .02, .04). Differences between modes were: conjunction (dictation: .19; writing: .10), lexical cohesion (dictation: .36; writing: .26) and restricted exophoric reference (dictation: .04; writing: .14).

Dialect by mode interaction and dialect factor follow-up. As indicated in Table 3, a significant multivariate test statistic was obtained for the dialect by mode interaction: F (5, 16) = 6.01 p. < .003. Again, to determine the nature and source of this interaction, discriminant analysis and univariate analyses variance (ANOVA) were performed on this interaction. Standard discriminant function coefficients along with the results of the univariate significance tests on each of the five cohesion categories are given in Table 7. These follow-up techniques demonstrate that reference and ellipsis are strong contributors to the interaction, graphed in Figure 2 from a univariate perspective.

Table 6

Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Mode at Urban School (1-2)

Cohesion Category	Standard Discriminat Function Coefficients	Univariate F Tests (1, 20)	p.<
Restricted Exophoric Reference	.486	8.54	.008
Reference	-.097	3.40	.080
Ellipsis	.225	.53	.48
Conjunction	-.742	33.93	.001
Lexical Cohesion	-.519	29.34	.001

Table 7

Discriminant Analysis and Univariate ANOVAs as Follow-up to Significant Dialect by Mode Interaction in Cohesion MANOVA for the Urban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (1, 20)	p.<
Restricted Exophoric Reference	.286	.79	.39
Reference	-.542	10.31	.004
Ellipsis	-.761	10.17	.005
Conjunction	-.453	1.31	.27
Lexical	.719	2.75	.11

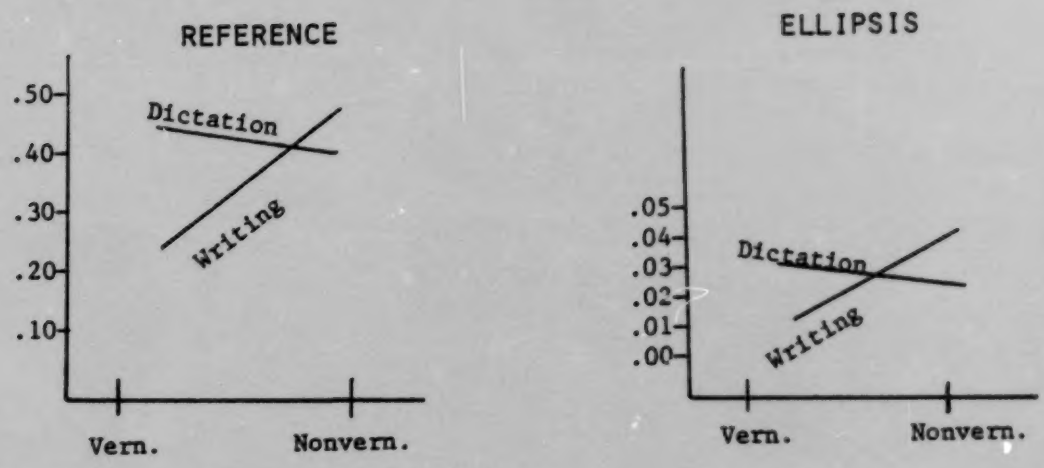

Figure 2. Dictation and Writing as a Function of Dialect at Urban School (1-2).

Mean difference (See Table 8) show that both dialect groups used reference about equally in dictation but the vernacular group made less use of reference than the nonvernacular group in writing. A similar pattern held for ellipsis. Both groups employed ellipsis equally in dictation but the vernacular group made less use of ellipsis than the nonvernacular group in writing. However, as indicated in Table 7, lexical cohesion is contributing as well to this function. The nature of its contribution to the interaction can be inferred from the dialect and mode factor follow-ups.

Again, using the same combination of follow-up techniques, discriminant and univariate analyses of significant multivariate test statistics, it can be seen (Table 3) that a significant Wilk's lambda criterion was obtained for the dialect factor: F (5, 16) = 3.95, p.< .016. Standard discriminant function coefficients and univariate significance tests (See Table 9) showed that conjunction, reference and ellipsis contributed most strongly to the dialect factor discriminant function while lexical cohesion contributed little. Mean differences (See Table 8) show that the nonvernacular group's

Table 8

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) at the Urban School (1-2) by Dialect and Mode

Dialect	Mode	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
Vernacular		.12	.28	.34	.24	.01	.03	.12	.12	.31	.19
	Dictation	.05	.07	.45	.21	.02	.03	.18	.10	.34	.10
	Writing	.18	.38	.24	.23	.00	.01	.07	.11	.28	.24
Nonvernacular		.06	.20	.43	.23	.03	.05	.16	.09	.32	.15
	Dictation	.02	.03	.41	.07	.02	.02	.20	.06	.38	.08
	Writing	.10	.28	.46	.31	.04	.07	.13	.10	.25	.18
Mode Means:	Dictation	.04	.06	.43	.15	.02	.03	.19	.09	.36	.09
	Writing	.14	.33	.35	.29	.02	.05	.10	.11	.26	.21

proportions (conjunction: .16, reference: .43, ellipsis: .03) were higher than the vernacular group's proportions (conjunction: .12, reference: .34, ellipsis: .01), while lexical cohesion proportions were nearly identical (nonvernacular: .32; vernacular: .31). Recalling the mode follow-up (See Table 6), lexical cohesion contributed strongly to the mode discrimination, but ellipsis and reference contributed little to it. Thus, the dialect by mode function was interpreted as having a dialect component made up of reference, ellipsis and conjunction and a mode component comprised of lexical cohesion, and to a much lesser extent, restricted exophoric reference.

Table 9

Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Dialect at Urban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (1, 20)	$p.<$
Restricted Exophoric Reference	.275	2.44	.13
Reference	-.640	4.93	.04
Ellipsis	-.626	5.51	.03
Conjunction	-.748	4.86	.04
Lexical Cohesion	-.004	.07	.79

Sex factor follow-up. As indicated in Table 3, a significant multivariate test statistic was obtained for sex: F (5, 16) = 3.01, $p.< .042$. The usual follow-up procedures were performed on the sex factor resulting in a finding that lexical cohesion proportions, the only ones to achieve significance on the univariate test statistic, made the strongest contribution to the sex factor discrimination (See Table 10), while conjunction, ellipsis

Table 10

Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Sex at Urban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficient	Univariate F Tests (1, 20)	p. <
Restricted Exophoric Reference	.324	3.50	.08
Reference	-.103	0.35	.56
Ellipsis	-.463	3.70	.07
Conjunction	.538	3.30	.08
Lexical Cohesion	-.817	4.85	.04

and restricted exophoric, though failing to achieve significance on the univariate statistic, made successively weaker contributions to the function. Means and standard deviations for the sex factor are displayed in Table 11. Girls employed a larger proportion of lexical cohesion (.35) than boys (.29).

Table 11

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) at the Urban School (1-2) by Sex

Sex	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
	M	SD	M	SD	M	SD	M	SD	M	SD
Male	.12	.32	.37	.26	.01	.04	.16	.11	.29	.17
Female	.06	.12	.40	.21	.02	.05	.13	.09	.35	.16

Urban School Cohesion Results: Dictation Only

The second MANOVA analyzed only the cohesion data in dictation at the urban school. As indicated in Table 12, significant multivariate effects were obtained for the dialect by sex interaction and the observation factor.

After removing the effects for the leading root for the observation factor, no significant discrimination remained.

Table 12

Cohesion MANOVA in Dictation, by Dialect, Sex, and Observation, for Urban School (1-2)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	23				
Dialect (A)	1	5.00	16.00	2.75	.056
Sex (B)	1	5.00	16.00	2.69	.060
Dialect X Sex (AB)	1	5.00	16.00	3.46	.026
S/AB	20				
Within Subjects	48				
Observation (C)	2	10.00	72.00	3.35	.001
		4.00	36.50	1.14	.353
Dialect X Observation (AC)	2	10.00	72.00	1.43	.187
		4.00	36.50	.45	.769
Sex X Observation (BC)	2	10.00	72.00	1.53	.148
		4.00	36.50	.63	.647
Dialect X Sex X Observation (ABC)	2	10.00	72.00	1.88	.062
		4.00	36.50	1.31	.285
SC/AB	40				
TOTAL	71				

Dialect by sex interaction follow-up. Again, a combination of discriminant analysis and univariate test statistics were employed to probe the nature of significant multivariate effects. Standard discriminant function coefficients and univariate statistics for each dependent variable are displayed in Table 13. Lexical cohesion, reference and conjunction appear to contribute about equally to the discrimination although lexical cohesion failed to achieve a significant univariate test statistic. As shown by the structure coefficients

in Table 13, reference and conjunction together, rather than combined with lexical cohesion, appeared to be the major contributors to the function. In all probability, suppression accounted for the discrepancy between these two coefficients. Structure coefficients represent correlations between discriminant scores and the original variables; these correlations provide estimates of the function with suppression removed. Thus, the interaction was interpreted as one largely based upon the contributions of reference and conjunction.

Table 13

Discriminant Analysis and Univariate ANOVAs as Follow-up to Significant Dialect by Sex Interaction in Cohesion MANOVA in Dictation for Urban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Structure Coefficients	Univariate F Tests (1, 20)	$p <$
Restricted Exo Ref	1.178	.450	2.54	.13
Reference	2.430	-.829	9.17	.007
Ellipsis	1.043	-.157	.29	.60
Conjunction	2.384	.821	10.02	.005
Lexical Cohesion	2.541	.199	.63	.44

Figure 3 graphs these first-order interactions from a univariate perspective. Vernacular females made greater use of reference and less use of conjunction than the other groups; nonvernacular females followed the opposite pattern--using reference less than nonvernacular males but conjunction more. Reference and conjunction means for nonvernacular females were similar to those for vernacular males (See Table 2).

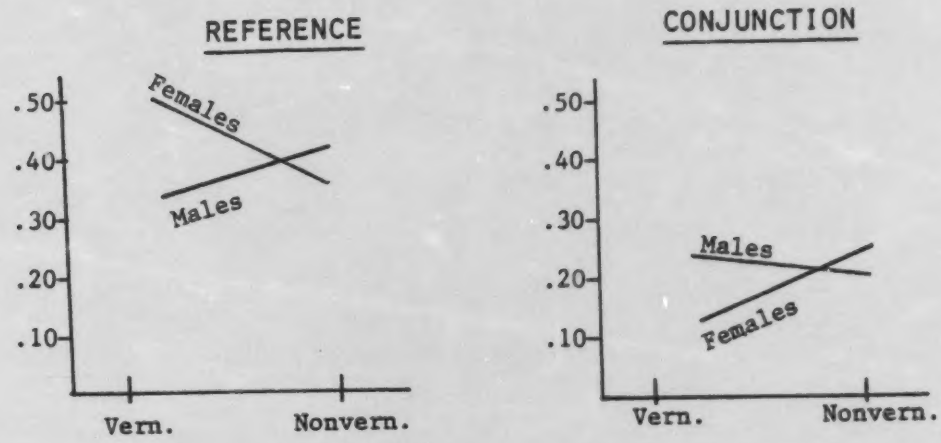

Figure 3. Reference and Conjunction as a Function of Dialect in Dictation at Urban School (1-2)

Observation factor follow-up. The significant multivariate test statistic for the observation factor: F (10, 72) = 3.35, p.< .001, was followed up by discriminant and univariate analyses (See Table 14).

Table 14

Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation for Observation at the Urban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 40)	p.<
Restricted Exophoric Reference	.745	6.56	.003
Reference	.166	5.17	.01
Ellipsis	-.394	1.98	.15
Conjunction	.255	.27	.77
Lexical Cohesion	.846	7.76	.001

Lexical cohesion and restricted exophoric reference appeared to make the strongest contribution to the function from a multivariate perspective,

while from a univariate framework, reference appeared also to account for significant observation differences in cohesion proportions. Mean differences over observation (See Table 15) show a drop in exophoric reference and lexical cohesion at observation 2 (early second grade) accompanied by an increase in reference. Cohesion proportions in all categories for dictation remained fairly stable throughout grade two.

Table 15

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) in Dictation at Urban School (1-2) by Observation

Observation		R Exo Ref	Ref.	Ellips	Conj.	Lex.
1	M	.07	.36	.01	.18	.40
	SD	(.09)	(.12)	(.02)	(.07)	(.09)
2	M	.02	.45	.03	.20	.33
	SD	(.02)	(.12)	(.04)	(.10)	(.08)
3	M	.02	.47	.02	.18	.35
	SD	(.02)	(.19)	(.02)	(.09)	(.10)

Suburban School Cohesion Results: Dictation and Writing

The third MANOVA analyzed cohesion data from subjects at the suburban school. Results from this multivariate analysis of variance are presented in Table 16. The MANOVA summary table indicates significant first-order interactions for sex by mode: F (5, 6) = 8.55, $p. < .01$ and mode by observation: F (10, 32) = 3.82, $p. < .002$, as well as a main effect for the observation factor: F (10, 32) = 3.33, $p. < .005$.

Table 16

Cohesion MANOVA by Sex, Mode, and Observation
in Dictation and Writing for Suburban School (1-2)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	11				
Sex (A)	1	5.00	6.00	1.57	.30
S/A	10				
Within Subjects	60				
Mode (B)	1	5.00	6.00	1.67	.27
Sex X Mode (AB)	1	5.00	6.00	8.55	.01
SB/A	10				
Observation (C)	2	10.00	32.00	3.33	.005
		4.00	16.50	1.31	.31
Sex X Observation (AC)	2	10.00	32.00	.77	.65
		4.00	16.50	.79	.55
SC/A	20				
Mode X Observation (BC)	2	10.00	32.00	3.82	.002
		4.00	16.50	1.03	.42
Sex X Mode X Observation (ABC)	2	10.00	32.00	1.83	.09
		4.00	16.50	1.71	.20
SBC/A	20				
TOTAL	71				

Mode by observation interaction and observation follow-ups. Discriminant analysis and univariate tests of significance (See Table 17) indicated that the interaction function was made up largely of lexical cohesion with lesser contributions from ellipsis, exophoric reference and reference. However, only lexical cohesion and reference achieved significance from a univariate perspective. Lexical cohesion and reference are graphed in Figure 4.

Table 17

Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Mode by Observation Interaction at Suburban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 20)	$p.<$
Restricted Exophoric Reference	0.158	0.06	.94
Reference	-0.068	6.02	.009
Ellipsis	-0.333	0.84	.45
Conjunction	-0.029	0.18	.84
Lexical Cohesion	-1.065	25.10	.001

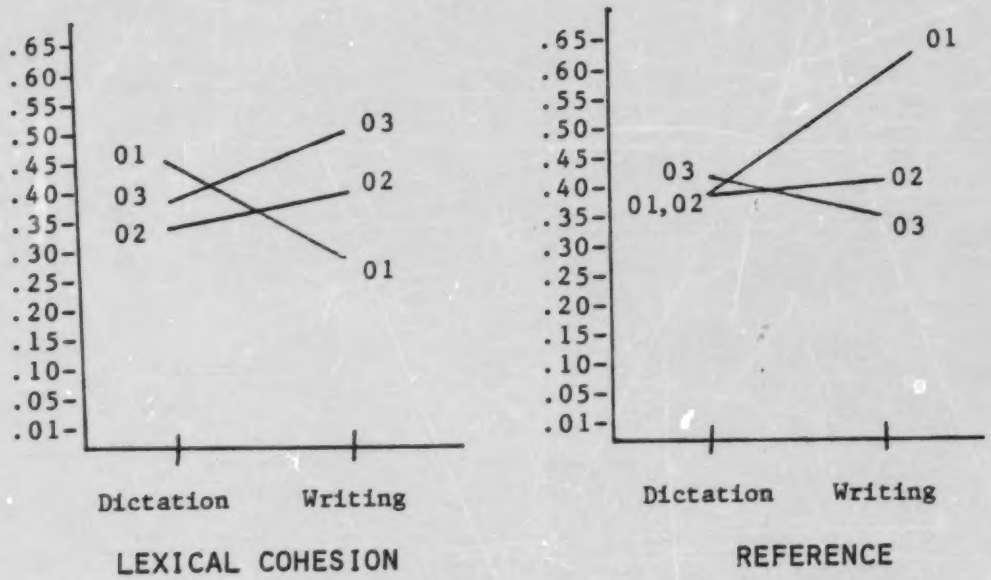

Figure 4. Lexical Cohesion and Reference in Dictation and Writing as a Function of Observation (1-2).

Mean difference (See Table 18) show that lexical cohesion proportions increased at each observation in writing while they declined in dictation early in grade two and rose only slightly by the end of second grade. Use of reference was stable across dictation observations but dropped across observations for writing.

Table 18

Means and Standard Deviations for Cohesion MANOVA
(Transformed Variables) at the Suburban School (1-2) by Mode and Observation

Mode	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
Dictation	1	.03	.04	.39	.10	.01	.01	.16	.08	.45	.11
	2	.02	.02	.39	.08	.02	.02	.25	.06	.34	.09
	3	.01	.01	.41	.08	.01	.01	.20	.07	.39	.06
Writing	1	.03	.10	.65	.32	.01	.02	.11	.13	.29	.20
	2	.02	.03	.41	.12	.03	.03	.17	.09	.39	.11
	3	.01	.02	.36	.07	.01	.02	.15	.06	.50	.11
Observation Means	1	.03	.03	.52	.27	.01	.01	.13	.11	.37	.18
	2	.02	.03	.40	.10	.02	.03	.21	.08	.37	.10
	3	.01	.01	.38	.08	.01	.02	.17	.07	.47	.10

Follow-up discriminant analysis and univariate tests of significance for the observation factor (See Table 19) showed that reference was the largest contributor to the function followed by lexical cohesion, ellipsis, and conjunction. Mean differences for observations (See Table 18) indicated an overall increase in lexical cohesion--as shown above largely in writing--and a decrease in reference--again, largely in writing. Ellipsis and conjunction proportions rose at observation two (early grade two) but fell slightly at observation three (end of grade two).

Table 19

Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Observation at Suburban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 20)	$p.<$
Restricted Exophoric Reference	0.095	1.15	.34
Reference	1.205	6.85	.005
Ellipsis	-0.598	5.97	.009
Conjunction	-0.183	7.47	.004
Lexical Cohesion	.722	2.94	.08

Sex by mode interaction follow-up in dictation and writing. Discriminant and univariate analyses were employed to follow up the sex by mode interaction: F (5, 6) = 8.55, $p.< .01$. All cohesion categories appear to have contributed to the discrimination with only ellipsis achieving significance on the univariate tests of significance (See Table 20). As will be shown in the next analyses for dictation alone, and can be seen from the previous analyses of writing alone (King & Rentel, 1981, pp. 60-61), no differences were obtained

for the sex factor in dictation but, in writing, ellipsis and lexical cohesion were significantly different for the sex factor--ellipsis: F (1, 10) = 30.83, $p.< .001$; lexical cohesion: F (1, 10) = 5.23, $p.< .05$.

Table 20

Discriminant Analysis and Univariate ANOVAs on Use of Cohesion Categories in Dictation and Writing for Sex by Mode Interaction at Suburban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (1, 10)	$p.<$
Restricted Exophoric Reference	1.188	1.16	.31
Reference	1.736	1.01	.34
Ellipsis	-0.928	37.09	.001
Conjunction	0.638	2.57	.14
Lexical Cohesion	.644	3.86	.08

As shown in Figure 5, male and female ellipsis proportions were equal in dictation but female proportions were higher in writing. Means and standard deviations are displayed in Table 21.

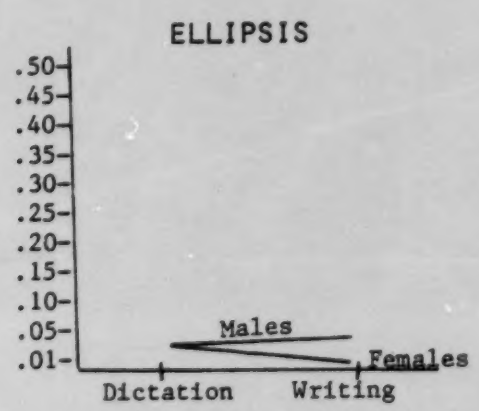

Figure 5. Ellipsis as a Function of Sex in Dictation and Writing at Suburban School (1-2).

Table 21

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) by Sex and Mode in Dictation and Writing at Suburban School (1-2)

Sex	Mode	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
Males	Dictation	.02	.03	.40	.10	.01	.02	.21	.09	.38	.11
	Writing	.03	.08	.52	.31	.00	.01	.18	.10	.33	.19
Females	Dictation	.02	.02	.39	.07	.01	.01	.19	.06	.41	.09
	Writing	.00	.01	.43	.13	.03	.03	.11	.09	.46	.12

Suburban School Cohesion Results: Dictation Only

The fourth MANOVA analyzed only cohesion proportions in dictation at the suburban school. A significant multivariate test statistic was obtained only on the observation factor for the leading root with a marginal statistic for the second root (See Table 22). Only the leading root was interpreted; however, both are presented in Table 23, where discriminant and univariate follow-ups are displayed. Lexical cohesion appeared to make the strongest

Table 22

Cohesion MANOVA in Dictation by Sex and Observation for Suburban School (1-2)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	11				
Sex (A)	1	5.00	6.00	1.18	.42
S/A	10				
Within Subjects	24				
Observation (B)	2	10.00	32.00	2.15	.05
		4.00	16.50	2.62	.07
Sex X Observation (AB)	2	10.00	32.00	1.23	.31
		4.00	16.50	.19	.94
SB/A	20				
TOTAL	35				

contribution to the function (first root) followed by reference and conjunction. However, since reference did not achieve a significant univariate test statistic, and given its strong correlation with lexical cohesion (.62), suppression was suspected; thus, only significant univariate differences for lexical cohesion and conjunction were interpreted. Means and standard deviations were presented in Table 18. Summarized, for lexical cohesion,

Table 23

Discriminant Analysis and Univariate ANOVAs in Dictation for Observation Factor at Suburban School (1-2)

Cohesion Category	Standard Discriminant Function Coefficient		Univariate *F* Tests (2, 20)	*p* <
	Root 1	Root 2		
Restricted Exophoric Reference	5.064	.548	1.47	.25
Reference	12.166	.607	.20	.82
Ellipsis	1.790	-.470	3.23	.06
Conjunction	10.203	-.068	4.46	.03
Lexical Cohesion	12.440	.731	4.12	.03

Proportions were: .45, .34, and .39 across observations; for conjunction, proportions were: .16, .25, and .20 across observations. Use of lexical cohesion dropped at observation two and increased at observation three. Conversely, use of conjunction increased at observation two and dropped at observation three.

Discussion of these results begins on page 45 following the presentation of results for the kindergarten/grade 1-2 replication study which follows.

Chapter 2

Kindergarten/Grade One Replication of the Transition from Speech to Writing

Our search for factors influencing children's transition from speech to writing began with subjects mid-way through first grade. Before long, however, we recognized that our subject (6 and 7 year olds) may already have passed through some of the critical factors in development. Therefore, we selected a comparable sample of kindergarten children in the spring of the school year to observe and to contrast their development with that of the older population. This additional study provided not only opportunity to probe for those factors we assumed occurred earlier in development, but also increased the potential generalizability of the research findings. Observations, data collection procedures and analyses of data for the kindergarten-grade one (K-1) subjects were identical to those used for the older children (See Appendix A for Procedures).

The main question prompting our research concerned the relationship between children's oral modes (story retelling and dictation) and their written mode. Specifically, are there features in stories produced orally that foreshadow characteristics in their writing? Are there trends in development in the different modes that are similar? Also, when do children from kindergarten through grade two learn to cope with particular demands of written texts? This chapter addresses these questions by presenting cohesion results of the replication study (K-1/1-2) for dictation and writing only. As noted earlier, it was not feasible to compare these modes with story retelling for the total population. Chapter III gives results of story structure comparisons across the three modes for those children who wrote and dictated

stories from the beginning. The results which follow compare K-1 to Grade 1-2 children on the basis of their use of elements of cohesion in dictated and written stories.

COHESION RESULTS FOR DICTATION AND WRITING: REPLICATIONS (K-1/1-2)

Preliminary multivariate analyses for school and mode indicated significant test statistics for both school and mode factors (See Appendix B). These findings led to a decision to compare kindergarten and grade one populations within each school in dictation and in writing separately. Thus, four multivariate analyses of variance (MANOVA) were performed on arcsine-transformed proportions of the five cohesion categories noted earlier.

The first MANOVA analyzed cohesion proportions in dictation at the urban school were grade (K-1/1-2), dialect (vernacular-nonvernacular), and sex (male-female) served as between-subjects factors and observation (March, 1979; October, 1979; and May, 1980) served as a within-subjects factors (See Table 24). Identical design arrangements were employed in the second MANOVA to analyze cohesion proportions in writing at the urban school. Means and standard deviations from the dictation MANOVA are presented in Table 25.

The third MANOVA analyzed cohesion proportions in dictation from the suburban school. Grade (K-1/1-2) and sex (male-female) were between-subjects factors; observation (March, 1979; October, 1979; and May, 1980) was a within-subjects factor. The same design arrangements were employed in the final MANOVA to analyze cohesion proportions in writing.

Urban School Cohesion Results for Dictation: Replication (K-1/1-2)

Results from the cohesion MANOVA on the urban-school, grade-replication data in dictation (See Table 24) indicated a significant multivariate test statistic for the observation factor. None of the first- or second-order interations were significant. Table 25 shows a significant Wilk's lambda

Table 24

Cohesion MANOVA by Grade, Dialect, Sex, and Observation in Dictation for Urban School (K-1/1-2)

Source	df	dfHYP	dfERR	F	P<
Between Subjects	39				
Grade (A)	1	5.00	28.00	.88	.51
Dialect (B)	1	5.00	28.00	.49	.79
Sex (C)	1	5.00	28.00	1.00	.44
Grade X Dialect (AB)	1	5.00	28.00	1.01	.43
Grade X Sex (AC)	1	5.00	28.00	2.08	.10
Dialect X Sex (BC)	1	5.00	28.00	.72	.62
Grade X Dialect X Sex (ABC)	1	5.00	28.00	1.88	.13
S/ABC	32				
Within Subjects	80				
Observation (D)	2	10.00	120.00	4.51	.001
		4.00	60.50	4.70	.002
Grade X Observation (AD)	2	10.00	120.00	1.74	.08
		4.00	60.50	.86	.49
Dialect X Observation (BD)	2	10.00	120.00	.51	.88
		4.00	60.50	.21	.93
Sex X Observation (CD)	2	10.00	120.00	1.14	.34
		4.00	60.50	.18	.95
Grade X Dialect X Observation (ABD)	2	10.00	120.00	1.17	.32
		4.00	60.50	.29	.89
Grade X Sex X Observation (ACD)	2	10.00	120.00	.61	.80
		4.00	60.50	.51	.73
Dialect X Sex X Observation (BCD)	2	10.00	120.00	.93	.51
		4.00	60.50	.77	.55
Grade X Dialect X Sex X Observation (ABCD)	2	10.00	120.00	1.00	.45
		4.00	60.50	.26	.90
SD/ABC	64				
TOTAL	119				

Table 25

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) in Dictation for Urban School (K-1/1-2) -- by Grade and Observation

Grade	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
K-1		.05	.08	.42	.13	.02	.03	.17	.10	.38	.17
	1	.10	.12	.42	.11	.02	.04	.15	.09	.32	.09
	2	.03	.04	.42	.14	.02	.02	.21	.12	.33	.07
	3	.03	.04	.40	.16	.00	.00	.14	.08	.47	.24
1-2		.04	.06	.43	.15	.02	.03	.19	.09	.36	.09
	1	.02	.03	.36	.12	.01	.02	.18	.07	.40	.09
	2	.02	.03	.45	.13	.03	.04	.20	.10	.33	.08
	3	.02	.02	.47	.19	.02	.02	.18	.09	.35	.10
Observation Means											
	1	.08	.10	.39	.12	.01	.03	.17	.08	.36	.10
	2	.03	.03	.43	.12	.03	.03	.21	.11	.33	.07
	3	.02	.03	.42	.15	.01	.02	.17	.08	.42	.19

criterion for observation for the first root: F (10, 120) = 4.51, $p.< .001$; and the second root: F (4.00, 60.50) = 4.70, $p.< .002$.

Observation factor follow-up. Discriminant analysis and univariate analyses of variance (ANOVA) were employed to probe the nature and source of the significant, multivariate, test statistic for the observation factor. These follow-up techniques (See Table 26) indicated that, lexical cohesion and conjunction contributed about equally to the function making up the first root, with ellipsis and restricted exophoric references contributing lesser

Table 26

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Dictation for Observation Factor at Urban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients		Univariate F Tests	
	Root 1	Root 2	(2, 64)	$p.<$
Restricted Exophoric Reference	-0.925	-0.507	9.45	.001
Reference	-3.213	-0.133	1.02	.37
Ellipsis	-1.024	-0.535	3.59	.03
Conjunction	-2.474	-0.417	2.77	.07
Lexical Cohesion	-2.407	0.507	5.68	.005

amounts to the discrimination, while ellipsis, lexical cohesion, restricted exophoric reference and conjunction contributed about equally to the function making up the second root. Mean differences (See Table 25) indicated overall decreases in restricted exophoric reference with increases in cohesion proportions for other categories across observations--reference excepted, given its relative stability over observations. This stability probably accounts for its strong contribution to the function making up the first root. The presence of two significant roots, composed of similar contributions but

distinguished by differences in directionality for lexical cohesion between first and second roots, is probably best explained by increasing lexical cohesion proportions across observations for the K-1 population contrasted with decreasing lexical cohesion proportions for the 1-2 population. This explanation is supported by the grade by observation interaction--which approached a significant multivariate test statistic (See Table 25) and, indeed achieved a designated level on the univariate test statistic only for lexical cohesion: F (2, 64) = 6.02, p. < .001 (See Table 27). This univariate grade by observation interaction for lexical cohesion is graphed in Figure 6

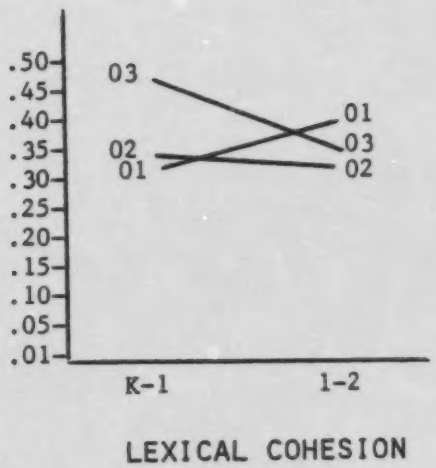

Figure 6. Observation as a Function of Grade in Dictation at Urban School (K-1/1-2).

Table 27

Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Dictation for Grade by Observation Interaction at Urban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 64)	$p.<$
Restricted Exophoric Reference	.627	.33	.72
Reference	.972	1.46	.24
Ellipsis	.665	1.68	.19
Conjunction	.723	1.65	.20
Lexical Cohesion	-.080	6.02	.004

Urban School Cohesion Results for Writing: Replication (K-1/1-2)

Results from the MANOVA on the urban-school, K-1/1-2 data indicated a significant multivariate test statistic for the main effects of grade, dialect, and observation; and first-order interaction effects for grade by dialect and grade by sex (See Table 28).

Grade by dialect interaction in writing at urban school. Using the customary discriminant analysis and univariate analysis of variance (ANOVA) procedures to follow up significant multivariate effects, these techniques indicated lexical cohesion proportions contributed strongly to the discrimination followed by reference, conjunction and ellipsis. Only lexical cohesion and ellipsis achieved predesignated alpha levels on the univariate significance tests (See Table 29).

Table 28

Cohesion MANOVA by Grade, Dialect, Sex, and Observation in Writing at Urban School (K-1/1-2)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	39				
Grade (A)	1	5.00	28.00	4.43	.004
Dialect (B)	1	5.00	28.00	4.28	.005
Sex (C)	1	5.00	28.00	.86	.52
Grade X Dialect (AB)	1	5.00	28.00	7.23	.001
Grade X Sex (AC)	1	5.00	28.00	3.47	.02
Dialect X Sex (BC)	1	5.00	28.00	1.43	.25
Grade X Dialect X Sex (ABC)	1	5.00	28.00	.50	.78
S/ABC	32				
Within Subjects	80				
Observation (D)	2	10.00 4.00	120.00 60.50	5.11 1.49	.001 .22
Grade X Observation (AD)	2	10.00 4.00	120.00 60.50	1.62 0.94	.11 .45
Dialect X Observation (BD)	2	10.00 4.00	120.00 60.50	0.57 0.07	.84 .99
Sex X Observation (CD)	2	10.00 4.00	120.00 60.50	1.13 0.89	.34 .48
Grade X Dialect X Observation (ABD)	2	10.00 4.00	120.00 60.50	1.09 0.38	.37 .82
Grade X Sex X Observation (ACD)	2	10.00 4.00	120.00 60.50	0.60 0.34	.81 .85
Dialect X Sex X Observation (BCD)	2	10.00 4.00	120.00 60.50	1.05 0.48	.41 .75
Grade X Dialect X Sex X Observation (ABCD)	2	10.00 4.00	120.00 60.50	0.27 0.23	.99 .92
SD/ABC	64				
TOTAL	119				

Table 29

Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Grade by Dialect Interaction at Urban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (1, 32)	$p <$
Restricted Exophoric Reference	.044	.04	.84
Reference	1.100	1.44	.24
Ellipsis	.458	4.53	.04
Conjunction	.740	1.16	.29
Lexical Cohesion	-1.400	5.64	.02

Mean differences for ellipsis and lexical cohesion proportions are graphed in Figure 7 with corresponding means and standard deviations displayed in

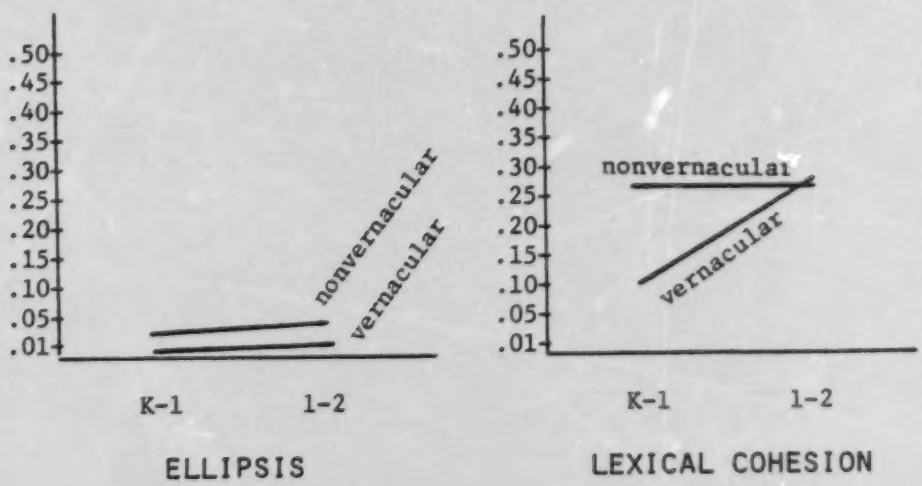

Figure 7. Dialect as a Function of Grade for Ellipsis and Lexical Cohesion in Writing for Urban School (K-1/1-2)

Table 30. Kindergarten vernacular and nonvernacular ellipsis means were roughly equal while 1-2 nonvernacular means for ellipsis were higher than 1-2 vernacular means. Figure 7 also shows that nonvernacular K-1 means for lexical cohesion were higher than vernacular means but that 1-2 nonvernacular and vernacular means for lexical cohesion were roughly equal. In other words, for lexical cohesion earlier differences between vernacular and nonvernacular subjects all but disappeared in the grade 1-2 population. The reverse was true for ellipsis: differences were observed in the grade 1-2 population that did not exist in the K-1 population.

Grade by sex interaction in writing at urban school (K-1/1-2)--follow-up. A significant multivariate test statistic for the grade by sex interaction (See Table 28), again, was followed up by a combination of discriminant analysis and analysis of variance on the five cohesion proportions for writing at the urban school. None of the univariate test statistics for cohesion proportions achieved predesignated alpha levels, although lexical cohesion, one of the strongest contributors to the discriminant function, did approach significance: F (1, 32) = 3.39, p.< .08. As shown in Table 31, lexical cohesion, reference, and conjunction contributed strongly to the function; however, in the absence of significant univariate effects, interpretation of this grade by sex interaction was simply too risky to pursue. The absence of significant multivariate or univariate main effects for sex coupled with significant multivariate and univariate effects for grade suggest a guarded grade level interpretation. Means and standard deviations by sex and grade are given in Table 32 for the reader who may want to pursue an interpretation.

Table 30

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) on Writing for Urban School (K-1/1-2) -- by Grade and Dialect

Grade	Dialect	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
K-1		.07	.24	.34	.39	.01	.02	.03	.08	.20	.24
	Vernacular	.11	.33	.34	.50	.00	.01	.02	.06	.12	.20
	Nonvernacular	.04	.09	.34	.27	.01	.02	.05	.09	.27	.26
1-2		.12	.31	.32	.26	.02	.06	.10	.11	.27	.22
	Vernacular	.15	.32	.23	.23	.01	.01	.07	.12	.28	.25
	Nonvernacular	.10	.30	.41	.25	.04	.07	.13	.10	.27	.18
Dialect Means:											
	Vernacular	.13	.32	.29	.39	.00	.01	.04	.10	.20	.24
	Nonvernacular	.07	.22	.37	.26	.03	.06	.09	.11	.27	.22

Table 31

Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Grade by Sex Interaction at Urban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (1, 32)	p. <
Restricted Exophoric Reference	.282	1.12	.30
Reference	1.169	.32	.57
Ellipsis	-.062	.59	.45
Conjunction	.704	1.40	.25
Lexical Cohesion	-1.416	3.39	.08

Table 32

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) on Writing for Urban School (K-1/1-2) -- by Grade and Sex

Grade	Sex	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
K-1	Males	.07	.13	.31	.36	.00	.01	.03	.07	.21	.25
	Females	.03	.26	.38	.41	.01	.01	.04	.08	.18	.19
1-2	Males	.19	.44	.36	.35	.01	.04	.11	.13	.21	.20
	Females	.09	.16	.34	.23	.03	.06	.08	.09	.32	.21

Grade factor follow-up. Given that dialect and sex were implicated with grade in previously discussed interaction effects, the following interpretation of the grade-factor, discriminant and univariate, follow-up techniques should be taken with care. These follow-up techniques (See Table 33) indicated that, of the cohesion proportions achieving significant

Table 33

Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Grade Factor at Urban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (1, 32)	$p.<$
Restricted Exophoric Reference	-.060	.96	.34
Reference	-.427	.09	.76
Ellipsis	.643	7.12	.01
Conjunction	.648	12.16	.001
Lexical Cohesion	.442	4.99	.03

univariate alpha levels, conjunction, ellipsis and lexical cohesion, in that order, made the strongest contribution to the discriminant function. Grade level means and standard deviations for cohesion proportions are given in Table 25. All grade 1-2 proportions were higher than K-1 proportions: conjunction (.10, .03); ellipsis (.02, .01) and lexical cohesion (.27, .20).

Dialect factor follow-up. Follow-up techniques for the significant multivariate main effect for dialect (See Table 28) indicated that ellipsis and conjunction were the strongest contributors to the discriminant function and both, as indicated in Table 34, achieved designated univariate alpha levels.

Table 34

Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Dialect Factor at Urban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (1, 32)	p. <
Restricted Exophoric Reference	.437	1.66	.20
Reference	-.077	1.39	.25
Ellipsis	-.788	11.08	.002
Conjunction	-.718	5.53	.03
Lexical Cohesion	.011	3.46	.07

Dialect means are displayed in Table 30. Nonvernacular means were higher than vernacular means for both ellipsis (.03, .00) and conjunction (.09, .04).

Observation factor follow-up. Discriminant function coefficients and univariate ANOVAs, performed on the writing data, following up the significant multivariate statistic for observation (See Table 28), indicated that all cohesion proportions except ellipsis, contributed to the observation discrimination -- lexical cohesion making the strongest contribution, followed by conjunction, reference, and restricted exophoric reference. (See Table 35). Observation means for cohesion proportions in writing at the urban school are displayed in Table 36. Lexical cohesion proportions increased across observations as did proportions for conjunction and reference. Restricted exophoric reference proportions declined as well but not uniformly.

Table 35

Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation Factor at Urban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 64)	p.<
Restricted Exophoric Reference	-.136	3.94	.02
Reference	-.425	3.70	.03
Ellipsis	-.088	.27	.76
Conjunction	-.464	8.93	.001
Lexical Cohesion	-.777	16.39	.001

Table 36

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) on Writing for Urban School (K-1/1-2) -- by Observation

Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
	M	SD	M	SD	M	SD	M	SD	M	SD
1	.19	.37	.24	.29	.01	.05	.02	.07	.11	.17
2	.01	.04	.34	.35	.02	.03	.08	.10	.23	.24
3	.09	.28	.41	.34	.02	.05	.10	.12	.37	.21

Suburban School Cohesion Results for Dictation: Replication (K-1/1-2)

The third MANOVA analyzed cohesion data in dictation at the suburban school. No significant main or interaction effects were obtained for the dictation mode, although the observation factor approached a significant Wilk's lambda criterion (See Table 37).

Table 37

Cohesion MANOVA by Grade, Sex, and Observation in Dictation for the Suburban School (K-1/1-2)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	23				
Grade (A)	1	5.00	16.00	.68	.64
Sex (B)	1	5.00	16.00	1.10	.40
Grade X Sex (AB)	1	5.00	16.00	1.39	.28
S/AB	20				
Within Subjects	48				
Observation (C)	2	10.00	72.00	1.88	.06
		4.00	36.50	1.74	.16
Grade X Observation (AC)	2	10.00	72.00	.80	.63
		4.00	36.50	.50	.74
Sex X Observation (BC)	2	10.00	72.00	.71	.71
		4.00	36.50	.29	.88
Grade X Sex X Observation (ABC)	2	10.00	72.00	.66	.76
		4.00	36.50	.68	.61
SC/AB	40				
TOTAL	71				

Suburban School Cohesion Results for Writing: Replication (K-1/1-2)

The final cohesion MANOVA analyzed writing data at the suburban school. Significant multivariate test statistics were obtained for the sex and observation factors as well as for the grade by observation and sex by observation, first-order interactions (See Table 38). Cohesion means and standard deviations for dictation and writing by grade and observation are displayed in Table 39.

Table 38

Cohesion MANOVA by Grade, Sex, and Observation in Writing for the Suburban School (K-1/1-2)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	23				
Grade (A)	1	5.00	16.00	2.14	.11
Sex (B)	1	5.00	16.00	2.95	.05
Grade X Sex (AB)	1	5.00	16.00	1.84	.16
S/AB	20				
Within Subjects	48				
Observation (C)	2	10.00	72.00	4.48	.001
		4.00	36.50	.99	.43
Grade X Observation (AC)	2	10.00	72.00	2.39	.02
		4.00	36.50	1.21	.32
Sex X Observation (BC)	2	10.00	72.00	2.14	.03
		4.00	36.50	.71	.59
Grade X Sex X Observation (ABC)	2	10.00	72.00	1.84	.07
		4.00	36.50	.92	.46
SC/AB	40				
TOTAL	71				

Table 39

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) in Dictation and Writing for Suburban School (K-1/1-2) by Grade, Mode, and Observation

Grade	Mode	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
			M	SD	M	SD	M	SD	M	SD	M	SD
K-1	Dictation	1	.01	.02	.44	.20	.01	.02	.20	.04	.36	.15
		2	.01	.01	.38	.07	.01	.02	.22	.10	.40	.09
		3	.00	.01	.47	.06	.02	.04	.18	.07	.35	.09
	Writing	1	.04	.10	.48	.45	.01	.02	.04	.06	.16	.17
		2	.07	.21	.45	.28	.14	.45	.09	.12	.36	.21
		3	.00	.00	.47	.19	.03	.06	.13	.11	.40	.13
1-2	Dictation	1	.03	.04	.39	.10	.01	.01	.16	.08	.45	.11
		2	.02	.02	.39	.08	.02	.02	.25	.06	.34	.09
		3	.01	.01	.41	.08	.01	.01	.20	.07	.39	.06
	Writing	1	.03	.10	.65	.32	.00	.02	.11	.13	.29	.20
		2	.02	.03	.41	.12	.03	.03	.17	.09	.39	.11
		3	.01	.02	.36	.07	.01	.02	.15	.06	.50	.11
Means Over Grade:												
	Dictation		.01	.02	.41	.11	.01	.02	.20	.07	.38	.11
		1	.02	.03	.41	.15	.01	.02	.18	.06	.41	.14
		2	.02	.02	.39	.07	.02	.02	.23	.08	.37	.10
		3	.00	.01	.44	.07	.02	.03	.19	.07	.37	.08
	Writing		.03	.10	.47	.28	.04	.19	.12	.11	.35	.19
		1	.03	.10	.56	.40	.01	.02	.08	.11	.23	.20
		2	.04	.15	.43	.21	.09	.32	.13	.11	.38	.17
		3	.00	.01	.42	.16	.02	.06	.14	.09	.45	.13

Grade by observation follow-up. To determine the nature of the significant multivariate test statistic for the grade by observation interaction in writing at the suburban school, as in previous follow-ups, discriminant and univariate analyses were employed (See Table 40). Reference, ellipsis,

Table 40

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Grade by Observation at Suburban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 40)	p.<
Restricted Exophoric Reference	.664	.46	.64
Reference	1.421	1.87	.17
Ellipsis	1.092	.60	.56
Conjunction	.828	.72	.49
Lexical Cohesion	.908	.85	.44

lexical cohesion, conjunction, and restricted exophoric reference, in that order, contributed successively lesser amounts to the discrimination. No significant, univariate, first-order interactions were obtained for any of the cohesion proportions. Examination of the writing means (Table 39) for each grade across observations are graphed in Figure 8. Proportions of reference, conjunction and lexical cohesion are generally higher for the 1-2 population and somewhat higher for the K-1 population for restricted exophoric reference and ellipsis mainly at observation two. Given the K-1 standard deviations for exophoric reference (.21) and ellipsis (.45) at observation two, there is a strong likelihood that a single subject in each case may have accounted for these two, unexpectedly high, K-1 means. Assuming such, significant differences for the observation factor main effect may be interpreted largely as magnitude differences.

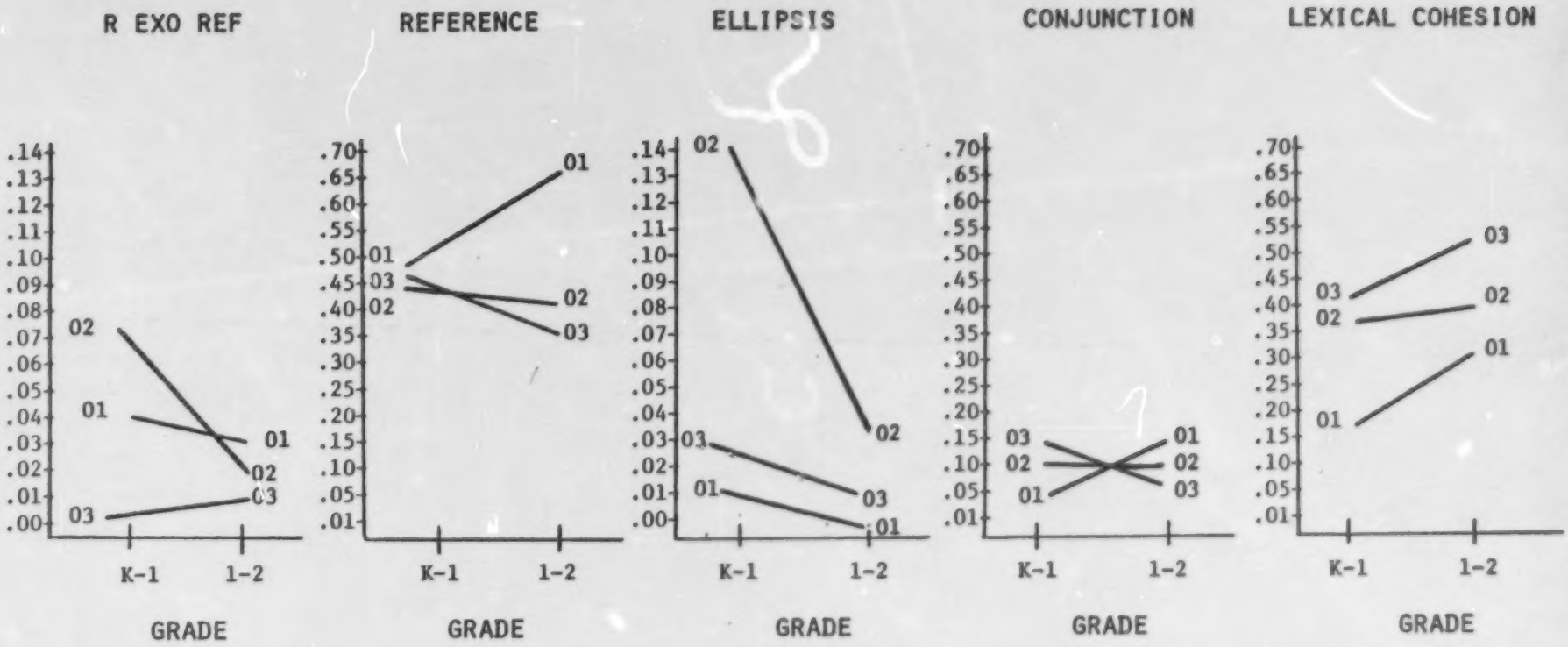

Figure 8. Observation as a Function of Grade for Restricted Exophoric Reference, Reference, Ellipsis, Conjunction, and Lexical Cohesion in Writing at Suburban School (K-1/1-2)

Sex by observation follow-up. Both discriminant function coefficients and univariate tests of significance indicated that reference proportions accounted largely for the sex by observation interaction in writing as the suburban school (See Table 41). Means and standard deviations in writing by sex and observation are presented in Table 42. Reference means are graphed in Figure 9. Males employed significantly more reference ties at observation one (.76) than females (.37) and fewer reference ties at observations two (.38) and three (.40) than females at observation two (.47) and three (.43).

Table 41

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Sex by Observation Interaction at Suburban School (K-1/1-2)

Cohesion Category	Standard Discriminant Function Coefficients	Univariate F Tests (2, 40)	p. <
Restricted Exophoric Reference	.699	1.33	.28
Reference	1.452	5.73	.006
Ellipsis	.748	1.04	.36
Conjunction	.676	.29	.75
Lexical Cohesion	.560	.20	.82

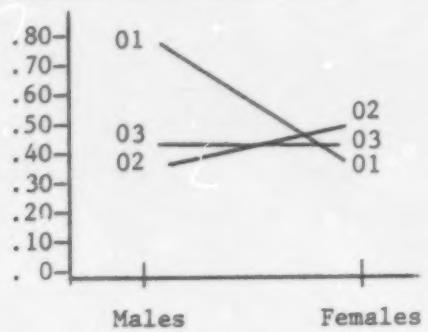

Figure 9. Observation as a Function of Sex for Reference in Writing at Suburban School (K-1/1-2).

Table 42

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables)
for Suburban School in Dictation and Writing (K-1/1-2) by Sex, Mode, and Observation

Sex	Mode	Observation	Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
			M	SD	M	SD	M	SD	M	SD	M	SD
Males			.02	.06	.47	.25	.03	.19	.17	.10	.36	.16
	Dictation		.01	.03	.42	.13	.02	.03	.19	.08	.38	.13
		1	.02	.04	.42	.20	.01	.02	.18	.07	.41	.17
		2	.02	.02	.40	.06	.02	.02	.21	.09	.38	.11
		3	.00	.01	.44	.09	.02	.04	.20	.08	.36	.09
	Writing		.03	.08	.51	.32	.05	.26	.15	.11	.33	.19
		1	.06	.13	.76	.40	.01	.02	.10	.12	.19	.19
		2	.02	.03	.38	.21	.14	.45	.17	.13	.36	.17
		3	.01	.01	.40	.15	.01	.01	.18	.08	.44	.09
Females			.02	.09	.41	.17	.02	.04	.14	.10	.38	.15
	Dictation		.01	.02	.41	.08	.01	.01	.21	.07	.38	.08
		1	.02	.03	.41	.10	.01	.01	.18	.06	.41	.09
		2	.01	.02	.37	.08	.02	.01	.25	.07	.36	.08
		3	.01	.01	.43	.05	.01	.01	.18	.06	.38	.07
	Writing		.02	.12	.43	.23	.02	.05	.08	.09	.37	.19
		1	.01	.03	.37	.29	.00	.02	.06	.10	.26	.20
		2	.06	.21	.47	.21	.03	.04	.09	.09	.39	.17
		3	.00	.01	.43	.17	.04	.08	.10	.08	.46	.16

Sex factor follow-up. Discriminant analysis and analysis of variance, again, were employed as follow-up techniques to probe the significant multivariate statistic in writing at the suburban school for the sex factor: F (5, 16) = 2.95, $p < .05$ (See Table 38). As shown in Table 43, reference and conjunction proportions contributed strongly to the discrimination for the sex factor; however, only conjunction reached the designated alpha level--the discrepancy explained by the previously discussed interaction for reference where observation means varied substantially but overall reference means for sex did not differ (See Table 42).

Table 43

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Sex at Suburban School (K-1/1-2)

Cohesion Category	Discriminant Function Coefficients	Univariate F Tests (1, 20)	$p <$
Restricted Exophoric Reference	.638	.02	.90
Reference	1.008	3.09	.09
Ellipsis	.370	.42	.52
Conjunction	.957	7.54	.01
Lexical Cohesion	.527	.66	.43

Observation factor follow-up. The final follow-up for the cohesion MANOVA in writing at the suburban school (K-1/1-2) employed the usual discriminant and univariate analyses (See Table 44). Lexical cohesion made the strongest contribution to the discriminant function and was the only univariate variable to achieve significance. Means and standard deviations

for the observation factor in writing are displayed in Table 39. Lexical cohesion proportions in writing increased substantially across observations (.23, .38, .45). Table 39 also indicates conjunction proportions increased while reference proportions decreased--but not significantly.

Table 44

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation at Suburban School (K-1/1-2)

Cohesion Category	Discriminant Function Coefficients	Univariate F Tests (2, 40)	p.<
Restricted Exophoric Reference	-0.642	.79	.46
Reference	-0.526	2.31	.11
Ellipsis	-0.659	1.22	.31
Conjunction	-0.503	2.94	.06
Lexical Cohesion	-1.220	17.75	.001

DISCUSSION OF COHESION RESULTS

The Transition to Writing: Mode and Grade Comparisons

The most obvious mode differences for cohesion were magnitude differences while deployment differences within categories were minimal. That is, higher proportions of lexical cohesion, conjunction, reference and ellipsis were employed in dictation than in writing but lower proportions of restricted exophoric reference were used in dictation. In dictation, endophoric ties were far more prevalent than in writing, despite the fact that the discourse context was oral. While there were sex and dialect differences in writing,

there were none in dictation. The major differences reflected in the dictation data were developmental differences--differences across observations. Proportions of lexical cohesion, conjunction, reference, and restricted exophoric reference varied between modes mainly as a function of development in writing. Shifts between dictation and writing occurred across observations--patterns of use of cohesive elements within writing gradually coming to resemble their deployment within dictation. By the end of grade two, dictating a story and writing a story embodied nearly identical cohesive resources.

Development in writing appeared to recapitulate development in dictation. Comparisons between the two longitudinal populations--kindergarten children observed during their first 16 months of schooling and first-grade children observed over the same interval--indicated that, while overall proportions of all cohesive ties were somewhat lower for kindergarten children, differences between them and their first-grade counterparts narrowed substantially over the 16 months. By the time kindergarten children reached the end of first grade, cohesion proportions in their dictated and written texts strongly resembled proportions in the initial dictated and written texts produced by the old population. Again, the differences between these two longitudinal populations gradually declined over observations, but never completely so, suggesting a developmental lead for the first-grade children. As noted for dictation and writing, sex and dialect differences within both the kindergarten and first-grade populations were found only in writing. Developmental differences ordinarily, but not always, favored girls. A history of differential experience with traditional stories is the most likely explanation for initial distinctions between vernacular and nonvernacular subjects.

Restricted Exophoric Reference. Restricted exophoric reference decreased in both dictation and writing at both schools, for each grade, in both dialect

groups, whether male or female. The decline in exophoric reference across observations was steeper in writing than in dictation, steeper for boys than for girls, and steeper for vernacular subjects than for nonvernacular subjects. This finding clearly suggests that children had generally realigned their intentions and textual functions to the requirements of written and dictated texts. Given the fact that children were asked to dictate stories, a task very much like writing, it is not surprising to have found only minimal differences between modes. Exophoric reference proportions declined to roughly equal levels for modes among first-grade pupils but to somewhat higher levels for kindergarten boys and vernacular pupils in writing.

Reference. Reference proportions differed between schools, dialects, sexes, modes and across observations--but not between grades. However, much of this variability occurred in writing as a function of sex or dialect. There were significant grade-one increases of reference proportions across observations in both dictation and writing at the urban school. At the suburban school, reference proportions declined sharply at the beginning of second grade, but remained at the same level as dictation proportions throughout grade two and approximately equivalent to reference proportions at the urban school. Very large, suburban-school differences in first grade, however, can be attributed entirely to the larger proportion of reference ties used by boys in their written texts--and, quite possibly by just one or two boys, for the variance associated with the male writing mean was exceptionally high. Also, urban-school, vernacular females in grade one used more reference ties in dictation than other groups did, but used about the same amount of reference as other groups in writing. Otherwise, reference ties increased moderately in both dictation and writing across observations. But, what is more important about reference proportions is that for all observations they averaged from 35

to 50 percent of all cohesive ties employed in children's texts. If exophoric reference ties are included, the percentages are much higher at observation one, particularly in writing. Children at school age appear to have many if not most relations of text identity well within their competence.

Some tentative conclusions about reference can be drawn. By the end of first grade, personal and possessive pronouns were rarely used exophorically. Most remaining exophoria was confined to demonstratives. The issue in the case of demonstratives appears to have been the problem of distinguishing between proximals (these) and nonproximals (those) in the anaphoric sense of pointing to some aspect of the discourse or to an assumed context of situation. Comparatives, employed much less frequently than personals and demonstratives, still were employed anaphorically. More confident conclusions must await detailed analyses of reference ties, and, of course, other cohesion categories. Frequencies and proportions of specific ties within categories rather than among cohesion categories will provide more definitive and subtle indices of development.

Ellipsis. Ellipsis was used sparingly by children in both dictation and writing. Ellipsis proportions averaged about two percent of total cohesive ties in both modes. Substitution, a near relative to ellipsis, was used so infrequently that it was not included in any of our analyses. Ellipsis, like substitution, achieves cohesion through relations in words or groups of words. But, unlike substitution, ellipsis is a relation where something is left unsaid, yet is understood because of some presupposition in the structure of what must be inferred, "An elliptical item is one which, as it were, leaves specific structural slots to be filled from elsewhere." (Halliday & Hasan, 1976, p. 143). Ordinarily, the presupposed structure is present in the preceding text, and the cohesive tie is anaphoric. However, an elliptical structure may be exophoric.

So little ellipsis was employed by children in their texts that what follows is quite speculative.

The variance associated with ellipsis was unusually large, ordinarily at least twice the central tendency for any given cell. These large variances imply substantial individual differences. In most, but not all, circumstances ellipsis was used in conjunction with dialogue. Also, either one sex--girls, (grade-one, suburban-school) or the other, boys, (kindergarten, suburban-school)--in just a single observation accounted for strong increases in use of ellipsis. Two of several possible explanations seem most likely. The first is the possibility that some children were experimenting with dialogue in response to a classroom activity. Commonly, in spoken English, presupposition is signaled phonologically through tonic prominence. Tonic prominence indicates new or contrastive information. The occurance of an elliptical nominal is not unusual in this situation. The use of dialogue in some texts may have given rise to just this opportunity. The second explanation hinges on individual developmental differences. As just noted, ellipsis and dialogue are naturally linked. Dialogue provides opportunities for both nominal and verbal elliptical contrastiveness. Both the dialogue convention and its potential for contrastiveness simply may indicate that a few developmentally advanced children were able to incorporate dialogue in their texts, and, when they did, proportions of ellipsis increased correspondingly. Either of these explanations as well as others can be substantiated only through further extensive analysis of cohesive ties within each major category.

Conjunction. Major differences in conjunction proportions were associated with modes. Use of conjunction increased across observations in writing but remained relatively stable in dictation. This pattern held for

both kindergarten and first-grade children, although upper-grade proportions were higher on average. These observation differences for writing were discussed extensively in Volume 1 (King & Rentel, et. al., 1981). Data from the kindergarten population and dictated texts provided no grounds for altering our earlier conclusions. Children's maturing control over conjunction as a text-forming strategy took the following course. Initial use of conjunctions in writing was limited to just a small complement of conjunctions: and, but, so, and then. With these four conjunctions, children were extraordinarily versatile in linking clauses and sustaining their written texts. Later both imprecision and repetition were replaced by precise conjoined ties which employed because, soon, although, or, now, plus, and still. In writing, coordination, subordination, causality, antithesis, sequence, time, and condition had been organized into a working system of conjoining options, similar in magnitude and breadth to their dictated texts.

Lexical cohesion. A similar picture to the one just drawn for conjunction emerged for lexical cohesion. Use of lexical cohesion increased across observations in writing for all groups in both schools, but in dictation, lexical cohesion proportions declined moderately for all groups except urban-kindergarten children. For these children, lexical cohesion increased in both dictation and writing. Girls used significantly higher proportions of lexical cohesion than boys. Similarly, nonvernacular kindergarten children employed higher proportions of lexical cohesion in their dictated and written texts than nonvernacular children at the same level. By observations three, the end of first grade, vernacular and nonvernacular children employed nearly the same proportions of lexical cohesion in their texts, but, by this time, all children employed more lexical cohesion in writing than in dictation. This finding held for first grade children as well: by the end of second grade they employed more lexical cohesion in writing than in dictation.

The most likely explanation for both observation and mode differences is that children had learned to lexicalize meanings to the extent required by either dictation or writing--written texts, of course needing full lexicalization while dictation permitted some meanings to be coded through prosodic and gestural means. Initial mode differences, where lexical cohesion proportions were significantly higher for dictation, suggest that children were more advanced developmentally in the oral mode, and uninhibited by spelling, handwriting, and spacing demands, they could focus their attention on the communicative task at hand. In both dictation and writing, but particularly in writing, children emphasized the cohesive relation of co-referentiality through the use of reiteration. Where lexical items had dual roles to play, an identity role and a similarity function, children solved the problem of dual function by overmarking the cohesive relation. Their later texts reflected much greater awareness of textual relevance through increased use of synonymy, hyponymy, meronymy, and antynomy.

Lexical cohesion proportions across observations revealed several important dimensions of the transition to writing. Children's greater awareness of textual relevance is a telling indication of the importance they attributed to semantic foregrounding as a dominant carrier of meaning in written texts. Children's attempts to overmark the cohesive function underscored their sensitivity to the explicit necessities of written texts. The range and versatility of their lexical ties demonstrated their ability to express the content of their experiences logically, thus indicating a greater focus on language's ideational function--particularly in written texts that contained higher proportions of lexical cohesion than dictated texts. These mode differences also suggest that children had realigned attention and intention to produce texts unsupported by action or context

and to produce texts more sensitive to the needs of a distant audience. Finally, these increases in lexical cohesion indicate children's growing recognition that written texts must be internally consistent, that texts must specify classes of information, as well as relations between, within, and among classes.

Other aspects of lexical cohesion were examined in Volume 1 (King & Rentel, et. al., 1981). We will not repeat them here. Instead, in a later chapter, we will attempt to explain the nature of the transition to writing incorporating both cohesion and story structure in these explanations.

Chapter 3

The Transition to Writing: Story Structure for Grade 1-2

Like cohesion, stories have a significant role to play in the transition from speech to writing. Children frequently tell stories, both old and new, as they create their first written messages. These stories constitute a familiar rhetorical structure within which children organize the flow of discourse. Both Moffett (1968) and Britton (1970) have argued that the first tentative step children take toward writing is reflected in their ability to take over a conversation and maintain a topic independent of the prompting and feedback ordinarily found in dialogue. Britton argues that young children achieve their communicative intentions through speech but that writing at this stage in development serves another end: its purpose is to create a tangible artifact, a drawing, or a display. Langer's (1953) notion of presentational symbolism as distinguished from representational symbolism would best characterize these aims. Children frequently tell a story as they produce these displays (Britton, 1970). This form of solo discourse between thought and action embodies both elements of dialogue which are less collaborative and elements of narrative which are maintained by distinct actions. The cues children utilize as they develop a text are found not in what an interlocutor said but in the previous text and in the ongoing constructive actions of producing an artifact. As Vygotsky (1962) noted, language without an interlocutor must be consciously directed and sustained to replace the dynamic guiding quality afforded by a conversational partner. What children learning to write must grasp is how to take what is implicitly obvious in the context

and render it explicit in text. Cook-Gumperz (1977) characterized this trait as the ability to appreciate language as a structure separate from action. At school age, children have learned the underlying structure of stories (Johnson & Mandler, 1977; Glenn & Stein, 1978). These structures appear to be nearly fully represented in memory, for, when asked to recall stories which have been randomly organized, children produce a stereotypic or canonically organized version of the tale (Johnson & Mandler, 1977; Glenn & Stein, 1978). Further, there is some evidence that four and five year-old children's descriptions of common event sequences such as eating lunch at McDonald's (Nelson, 1978) rely heavily on schematic organization. This suggests a gradual acquisition of a story schema beginning with script-like chronicles which continue to grow in structural complexity up to age ten and beyond (Botvin & Sutton-Smith, 1977), culminating in well-formed, episodically organized structures--girls earlier than boys (Sutton-Smith et al., 1975; Dungan, 1977). If, indeed, memory for events and instances is so-organized, then story schemata may constitute one of the fundamental cognitive bases for the rhetorical scaffolds employed by beginning writers.

Both Winograd (1979) and Halliday (1973) maintain that such discourse schemata do provide guides or models for integrating language into texts. One such pattern is narrative. Halliday (1973) argues that children develop conceptions of what language is and how it works--that is, "relevant models" which represent a pattern of discourse. We think that such conventionalized models figure heavily in the design of children's beginning narratives and expect that fairy tales and folk tales provide a rhetorical framework for beginning writers. But, the extent to which such schemata guide production is not really known--however appealing or likely such a notion might be.

There is, of course, evidence that fairy tale and folk tale elements are represented in the original stories children tell and write. Rubin and Gardner (1977) argue from their data that children acquire a general frame for fiction starting at about three years of age which they then differentiate into specific story genres. By four years of age, children appear to have partially represented the "frame" for fairy tales (Rubin & Gardner, 1977). By six, stock characters such as witches and fairies appear in their written and dictated stories (Applebee, 1978). Oral narratives produced by children demonstrate that action elements very much akin to Propp's functions--plot units--do indeed characterize the organization and structure of children's fantasy narratives (Botvin, 1977; Botvin & Sutton-Smith, 1977).

Botvin and Sutton-Smith (1977) reported that many, but by no means the majority of their subjects, told fantasy narratives resembling the fairy tales analyzed by Propp (1968). Using a modification of Propp's morphological functions, Botvin and Sutton-Smith observed that the complexity of component action sequences in children's narratives increased in a direct relationship with age. Starting with nuclear dyads, that is, two logically related actions, children progressively expanded and elaborated these basic structures into fully-embedded complex plots. It is not clear, however, what role if any familiar folk and fairy tales played in providing these children with relevant models of fantasy texts and to what extent such models guided their early productions. Most narrative plots analyzed by Botvin and Sutton-Smith involved either a lack, and its liquidation or a villainy, and its nullification. These elements are identical to those posited by Propp--lack and lack liquidated; and villainy coupled with villainy nullified. In Propp's morphology two additional pairings, struggle coupled with victory, and difficult task paired with its solution, augmented the obligatory functions of lack and villainy.

This coincidence between children's narratives and the formal attributes of fairy tales as set forth by Propp suggests that, at some point in learning to compose, many if not all children employ a narrative schema quite similar to tales they have heard and read.

Fairy tales have a highly conventionalized plot structure (Propp, 1968). Favat (1977), who compared various popular tales ranging from Perrault to the Grimms and Anderson, observed that these tales have an extraordinarily predictable structure and bear a striking similarity to their Russian counterparts analyzed by Propp. Even Propp, speculating that fairy tales may have a common origin, made the following observation:

> Yet one still feels inclined to pose this question: if all fairy tales are similar in form, does this not mean that they all originate from a single source? The morphologist does not have the right to answer this question. At this point he hands over his conclusions to a historian or should himself become a historian. Our answer, although in the form of a supposition, is that this appears to be so. However, the question of sources should not be posed merely in a narrowly geographic sense... The single source may also be a psychological one. Much has been done by Wundt in this sphere. But here also one must be very cautious. If the limitation of the tale were to be explained by the limited faculties of human imagination in general, we would have no tales other than those of our given category, but we possess thousands of other tales not resembling fairy tales. Finally, this single source may come from everyday life. (p. 106)

Other literary structuralists (Todorov, 1971; Maranda & Maranda, 1971; Bremond, 1970; Dundes, 1964; Levi-Strauss, 1963) have explored the constitutive principles which define the narrative form. Despite differences among them, their analyses bear certain fundamental similarities. They all identify a principle of order or "succession," and both Propp (1968) and Todorov (1971) set forth a principle of transformation--though Propp did not incorporate the principle of transformation formally into his analysis of structure. These structuralists also identify functions, elements or units which are indispensable or essential

to the narrative. These elements generally include a beginning marked by some initial state of satisfaction or equilibrium, a complication or degredation of this initial state, a recognition of this change in state by the protogonist, an action which repairs or remedies the complication, and a restoration of equilibrium. None, however, completely fits the tales written for the enjoyment of children nor the tales written by children. Propp's analysis, however, does have the advantage of breadth and delicacy.

Hasan (1980) has argued that the stories children compose are a separate genre of fictional narrative which can be described in terms of five obligatory elements: (1) placement, (2) initial event, (3) sequent event, (4) final event, and (5) finale. She also proposed other nonobligatory elements found frequently in children's tales such as rituals, attributions, habitual actions, and relations to characters. King, Rentel and Cook (1980) compared Hasan's analysis of structure with Propp's and found that they correlated rather well (.65) when only obligatory elements were included in the analysis of narrative texts produced by six-year olds. Leondar (1977), who also analyzed children's narrative texts, concluded that children at the age of five or six produce texts that include an initial state of affairs, an event that disrupts this state, a counteraction to reverse the disruption, and a restoration to the original state. Thus, the stories that children tell and write bear an appreciable resemblance--at least in terms of structure--to the various ways in which structure in fairy tales and folk tales has been described. Leondar puts it this way:

> The constructive powers of the author and the reconstructive ones of the reader may be assumed to spring from a common source. On both counts, then, the development of narrative competence in early childhood invites examination. (p. 173)

Fairy tales, of course, comprise only one of the many genres of stories children encounter both in and out of school. Why should fairy tales and folk

tales be singled out as rhetorical models for beginning writers? First, the literature, as indicated above, provides evidence that young children's texts mirror many of the elements typically defined as elements of fairy and folk tales. Second, when children retell stories, even stories in which the underlying grammar or structure has been violated, their retellings are biased toward a prototypic or canonical form (Johnson & Mandler, 1977; Glenn & Stein, 1979). Third, fairy tales and folk tales delight and engage children unfailingly (Favat, 1977), and as Favat speculated, they probably do so because of their highly conventionalized structure. On these grounds, it is reasonable to assume that fairy tales in all probability are rather well-represented in memory by school age. To the extent that they are, we expect that such tales are fundamental rhetorical guides for beginning writers.

But how do such guides function in the production of a text? Our notion is that abstract story elements provide a range of options for selecting and organizing events in a temporal sequence revealing and emphasizing relations between and among characters and events (Leondar, 1977). They also provide a reservoir of states, complications, and repairs of an abstract sort--frames--to be propositionalized as events and roles (characters) to express the ideas contained in these frames (King & Rentel, 1979). The young storymaker must sustain a narrative in some cumulative way. Regardless of variety, the story teller must produce a schema containing both necessary and sufficient elements of a story. Such frames would provide the basis for cumulating units either additively or in parallel. Even with a minimum of rudimentary elements, through repetition, a narrative could be sustained indefinitely (Botvin & Sutton-Smith, 1977). Finally, particular sets of elements can be combined in parallel or in tandem affording the storymaker opportunities for thematic variation. The storymaker can give dimension to a story in the making.

These various perspectives converge on the notion that conventionalized models of text figure in the design of children's narratives. But why study children's narratives? Why not study the entire range of discourse children are capable of producing at school entry? First, even though rather sparse, there is at least a growing literature on the production of narrative texts by children at school age. The importance of having an existing literature from which hypotheses and methodology could be derived is self-explanatory. Economy alone would have been sufficient justification for focusing upon a single genre some of whose attributes and dimensions had already been characterized. Then, of course, with genre controlled, an important source of variation could be examined without need for further complicating an already complex set of logical and statistical comparisons. In addition, this existing literature gave rise to our expectation that children would be more likely to produce texts of greater length and nuance in narrative form than in other discourse genres. Finally, of necessity, research in school contexts must conform to the ongoing life of a classroom. Our problem at the outset was to select variables and manipulations which fit nicely into this context, yet constituted reliable and theoretically significant aspects of writing development to study. The structure of fictional narratives seemed to rest at the intersect of these points.

Analysis of Story Structure Data

Population sampling, story structure definition and analyses, genre classification, scoring and interscorer reliabilities were identical to procedures described in Volume 1. For the reader unfamiliar with Volume 1, detailed descriptions of these procedures are given in Appendix A'. Only the designs comparing story structure variables differed in the present studies, not in kind but in nuance and detail. These differences are described in the next section.

Both multivariate and univariate analyses of variance were employed for story structure comparisons. For the multivariate analyses, as with cohesion, computer program CANOVA (Clyde Computing Services, 1973) was used. This program tests for significant differences with Wilk's likelihood ration transformed to Rao's approximate F. Significant multivariate differences were followed up with univariate analyses of variance.

Number of function, function types, and moves served as dependent variables in six complementary multivariate analyses of variance performed on the story structure data. In the first of these analyses, 144 scores for each dependent variable were organized into a mixed design where sex (6 males and 6 females) and dialect (6 vernacular and 6 nonvernacular) served as between-subjects comparisons, and where discourse contexts (retelling and dictation) and observation periods (Spring, 1979; Fall, 1979; Spring, 1980) constituted the within-subjects comparisons. This study was designed to compare factors within the urban school setting. Similar design arrangements were employed in a second analysis whose purpose was to compare the urban with the suburban school controlling for dialect. While only middle class children from the two schools were compared, the two populations did differ on the Index of Status Characteristics with F (1, 20) = 5.39, p. <.05. Children from the suburban school averaged from middle to upper-middle class on the "index" (M = 32.25; S.D. = 4.41) while those from the urban school averaged somewhat higher scores on the scale (M = 38.33; S.D. = 7.47). The two populations had been equated on the scale at the outset of the study, but because of subject mortality and replacement, this initial equality was lost necessitating a school comparison. For this comparison, dependent variables were organized into a 2X2X2X3 fixed design where sex and school were the between-subjects factors and where modes and observations were the within-subjects factors.

A third multivariate analysis of variance, then, was employed to examine only the suburban school. As before, number of functions, functiontypes and moves were organized into a fixed design with one between-subjects comparison, sex (6 males and 6 females), and two within-subjects comparisons (contexts and observations).

Three additional multivariate analyses of variance focused upon dictation. Retelling was removed as a comparison in order to obtain a clearer view of dictation over the three observation periods -- retelling differences having potentially spurious origins in the variance associated with a priori story differences. In all other respects, design goals and arrangements were identical to those reported above. These studies were reported in Volume 1.

Likewise, an additional multivariate analysis of variance focused upon texts produced by a sample of subjects who were able to compose unequivocal fictional narratives. Just 14 subjects were able to do so at mid-grade one. This number rose to 27 by the end of grade two. The point of this multivariate analysis was to obtain developmental data controlled rigorously for genre. Other kinds of texts were excluded from this analysis to eliminate genre as a source of contaminating variance. Consequently, other comparisons such as sex, socioeconomic class, and dialect slipped from our grasp because, as might be expected, not all groups were equally represented in this new sample. Thus, dictation, retelling, and writing were compared in a fixed design over the three observation intervals--a comparison where modes of discourse and observations comprised within-subjects factors.

Multivariate analyses of variance were used in these studies to reduce the chance of drawing erroneous conclusions. Repeated univariate analyses over the same data would have entailed a potential "alpha error." Testing the significance of differences obtained in repeated analyses over the same

subjects using dependent variables which were conceptually and mathematically related had to make allowances for the fact that the scores obtained for each variable were undoubtedly correlated with each other. A test of significance was selected that would take these correlations into account thereby avoiding false conclusions about the probability of having observed a true difference--an "alpha error." Multivariate analysis of variance (MANOVA) makes such allowances, and requires of the researcher an a priori decision regarding true differences among all the variables of interest before tests of significance may be conducted for these same variables individually.

Then, too, the concept of structure we had advanced had more than a single dimension to it. Story structure as defined by functions, function types and moves was three-dimensional. To account for how social class, school, sex and observations contributed to this composite, a method of comparison had to be selected which would be sensitive to the direction and magnitude of these relationships assuming, of course, concommitant variation among the three variables that defined story structure. Again, multivariate analysis of variance permitted such comparisons.

We had decided that when significant multivariate (MANOVA) story structure effects were obtained for a factor or factors, these effects would be followed up with univariate analyses of variance (ANOVA) rather than any of a number of possible multivariate techniques that might have been employed.[1] The decision to employ univariate analysis of variance as a follow-up procedure was based upon the notion that for each of the dependent variables which made

[1] Because a clear a priori construct could be posited for cohesion, we employed discriminant function analysis as a follow-up technique to explain significant differences obtained in the multivariate analyses of variance of cohesion variables. Unlike story structure, theoretical relationships among the five categories of cohesive ties were amenable to rigorous linguistic interpretation and relatively clear theoretical explanation.

up the construct story structure, we had developed hypotheses which could be tested with reasonable prospects for explaining observed differences. That is, for the measure, number of functions, arguments had been advanced and assumptions had been examined critically resulting in a determination that number of functions was a viable and reliable index of sustaining power, and that, likewise, number of function types indexed storymaking range, and that moves measured complexity. The relationship of each of these dependent variables to the various independent variables we were probing could be given a tenable hypothetical explanation. But when functions, function types and moves were combined conceptually as the construct story structure, we had neither appropriate data to support the efficacy of such a construct, nor rigorous theoretical backing to permit disciplined explanation of fundings that might result from our analyses. On these grounds, a multivariate follow-up procedure was ruled out for the story structure studies. In short, we simply concluded that the problem of interpreting relations between independent and dependent variables in the case of story structure was larger than the current state of our data and our knowledge could handle within a multivariate perspective. Thus, we opted to follow up significant effects from multivariate analyses of variance, a procedure that protected against "alpha error," with univariate analysis of variance, a procedure that conservatively limited the scope of our conclusions and generalizations.

Story Structure: Mode Comparisons

As noted above just briefly, one set of analyses compared texts produced by a sample of 14 subjects (Grade 1-2) who were able to write fictional narratives when requested to tell or write a story. These analyses, of course, were designed to obtain developmental comparisons controlled rigorously for genre. To illustrate the methods employed in our longitudinal study, these genre-controlled comparisons will be presented below.

Texts that children produced, that is, retellings, dictations, and written stories, were analyzed and scored for number of functions, number of function types and number of moves by pairs of independent scorers. Different pairs of scorers were employed for each of the three production contexts. Interscorer reliabilities were established for retelling: .89; for dictation: .93; and for writing: .85. Over a sample of twenty texts, two scorers achieved a 78 percent agreement level on individual functions and two others achieved an 89 percent level of agreement. Differences among scorers were resolved and function definitions were refined. Having satisfied ourselves that our scoring procedures were essentially reliable and that we could reach satisfactory levels of agreement on scoring individual functions, we opted for economy's sake to have texts scored by a single scorer and checked by another for possible re-scoring. While double scoring of texts would have led to some increased accuracy, scoring language protocols is enormously time-consuming and therefore expensive, as anyone who has done it knows. Gains in accuracy must be weighed against costs, for obviously beyond a certain point small gains in accuracy become extremely costly. Reliabilities of the magnitude already attained suggested we had reached that point; therefore, we substituted a procedure wherein every text was scored and checked and differences resolved where necessary.

For those texts which were uniformly fictional stories, four multivariate analyses of variance were employed to compare story structure variables. Each multivariate analysis of variance was followed-up by pertinent univariate analyses of variance. In the first of these multivariate analyses of variance, a two-factor, repeated-measures design, <u>functions</u>, <u>function types</u> and <u>moves</u> served as dependent variables while discourse context and observations served as the two within-subjects comparisons comprising the fixed factors in this

design. The three additional multivariate analyses of variance were employed to probe each discourse context separately, the reasons for these added analyses to be given below. Each of these, in turn, was followed up by univariate analyses of variance where significant multivariate effects were obtained.

Results of the two-factor repeated-measures MANOVA are given below in Table 45. Discourse contexts and observations were the within-subjects factors in this design, and for both factors as well as for the first-order interaction, significant multivariate effects were obtained. Means and standard deviations are given in Table 46.

Table 45

Two-Factor Repeated Measure Story Structure
MANOVA by Discourse Contexts and Observations

Source	df	dfHYP	dfERR	F	p.<
Discourse Context (A)	2	6.00	48.00	24.18	.001
		2.00	24.50	13.69	.001
SA	26				
Observation (B)	2	6.00	48.00	8.06	.001
		2.00	24.50	1.92	.168
SB	26				
Discourse Context	4	12.00	132.58	3.17	.001
		6.00	123.34	.73	.623
		2.00	102.00	.63	.534
SAB	52				
TOTAL	112				

Table 46

Means and Standard Deviations of Functions, Function Types and Moves by Discourse Contexts and Observations

Discourse Context	Observation	Functions		Function Types		Moves	
		M	SD	M	SD	M	SD
Retelling		16.59	5.09	12.38	3.65	2.07	0.75
	1	15.64	7.07	11.21	3.81	2.14	0.86
	2	17.36	2.41	11.29	0.83	1.93	0.27
	3	16.79	4.93	14.64	4.31	2.14	0.94
Dictation		8.86	6.99	6.07	3.49	2.02	1.35
	1	8.21	8.56	5.36	3.69	1.86	1.41
	2	9.79	7.74	6.14	2.83	2.14	1.75
	3	8.57	4.42	6.71	3.97	2.07	0.83
Writing		3.36	2.66	3.12	2.41	0.93	0.51
	1	1.79	2.23	1,57	1.87	0.50	0.52
	2	3.71	2.89	3.64	2.82	1.07	0.27
	3	4.57	2.14	4.14	1.70	1.21	0.43

Follow-Up ANOVAs For the Discourse Contexts Factor

To determine the nature of the significant multivariate differences obtained for the discourse context factor, univariate analyses of variance (ANOVAs) were performed on each of the dependent variables. Table 46 displays the means and standard deviations for these dependent variables by discourse contexts and observations and Table 47 presents the ANOVA summaries. Significant differences were obtained among discourse contexts for each of the three dependent variables.

As shown in Table 46, and demonstrated by Tukey post hoc comparisons of means, children incorporated significantly more functions and function types in their retellings than they included in their dictations and written stories

Table 47

Follow-up Univariate ANOVAs on Functions,
Function Types, and Moves by Discourse Contexts

SOURCE	df	MS	F	p<	df	MS	F	p<	df	MS	F	p<
		Functions				Function Types				Moves		
Discourse Context (A)	2	1857.59	67.16*	.001	2	940.14	80.79*	.001	2	17.56	24.75*	.001
Error (SA)	26	27.66			26	11.64			26	0.71		
TOTAL	28				28				28			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 13) is significant at p< .01.

and significantly more functions in their dictations than in their written texts. Children also included significantly more moves in their retellings and dictations than they did in their written texts. As expected, retellings were more easily sustained than dictations and dictations more easily sustained than written stories. Likewise, retellings included a greater range of functions than did dictations and dictations a greater range of functions than writing. In both the retelling and the dictation contexts, children achieved roughly the same level of complexity--at least as complexity was indexed by moves, but in their written stories children produced significantly less-complex stories than they produced in either of the other discourse contexts.

Follow-Ups ANOVAs for the Observation Factor

In addition to the significant multivariate test statistic for the discourse contexts factor, the MANOVA on the story structure variables produced a significant Wilks' lambda criterion for observations: F (6.00, 48.00) = 8.06, $p. < .001$. After removal of effects associated with the leading root for observations, no significant discrimination remained. To determine the nature of the observation differences relative to the story structure variables, follow-up ANOVAs were performed on the three story structure dependent variables. Means and standard deviations for these variables are in Table 48. Only the follow-up ANOVA on function types produced a significant

Table 48

Means and Standard Deviations of Functions, Function Types, and Moves by Observations

Observations	Functions		Function Types		Moves	
	M	SD	M	SD	M	SD
1	8.55	8.58	6.05	5.11	1.50	1.22
2	10.29	7.44	7.02	3.95	1.71	1.11
3	9.98	6.47	8.50	5.68	1.81	0.86

univariate effect for observations. This effect is displayed in Table 49. Tukey post hoc tests demonstrated that observation-three texts, overall, contained significantly more function types than texts produced at observation one.

Table 49

Follow-up Univariate ANOVA on
Function Types by Observations

Source	df	MS	F	p. <
Observation (B)	2	64.02	9.34*	.001
Error (SB)	26	6.85		
TOTAL	28			

* Geisser-Greenhouse conservative F test using reduced degrees (1, 13) is significant at p. < .01.

Follow-Up ANOVAs for the Discourse Context by Observation Interaction

Table 45 indicates a significant multivariate effect for the first-order discourse context by observation, interaction. Again after removing effects associated with the leading root for this first-order interaction, no significant discrimation was observed for the remaining two roots. However, follow-up ANOVAs performed on the three story structure variables failed to turn up significant univariate interaction effects for any of the three dependent variables. Coupled with the significant effect for the discourse contexts factor, this finding of a significant multivariate interaction led to a decision to perform separate multivariate analyses of variance for each discourse context by observations as a way of trying to tease out the meaning of the interaction. Since clearly each of the three contexts had been demonstrated to be significantly different from the other, multivariate analyses of variance were in order to probe each context as an individual entity.

The Retelling Context

Scores from the three story structure variables were organized into a one-factor repeated-measures multivariate analysis of variance (MANOVA) wherein observations served as the within-subjects factor. Table 50 shows that a significant multivariate effect was obtained for observations. When effects associated with the leading root for observations were removed, no significant discrimination remained. This significant multivariate effect for observations was then followed up by univariate analyses of variance (ANOVA) performed on each of the three dependent variables for story structure: functions, function types and moves. These analyses (ANOVAs) produced a significant effect for the observation factor only on the function types dependent variable (See Table 52). Post hoc comparison of means (Tukey's HSD Procedure), which are shown in Table 51, demonstrated that a significantly greater range of function types were included in retellings at observation three than were included in retellings produced at observations one or two. The number of function types included in retellings produced at observations one and two, however, did not differ significantly.

Table 50

Story Structure MANOVA in Retelling Context by Observations

Source	df	dfHYP	dfERR	F	p.<
Observation (A)	2	6.00	48.00	7.88	.001
		2.00	24.50	2.44	.108
Error (SA)	26				
TOTAL	28				

Table 51

Means and Standard Deviations for Function Types in Retelling Context by Observations

Observation	Function Types M	SD
1	11.21	3.81
2	11.28	0.83
3	14.64	4.31

The Writing Context

Results from the MANOVA on the writing data are shown in Table 53. This MANOVA summary table indicates a significant multivariate test statistic

Table 52

Follow-up Univariate ANOVA in Retelling Context on Function Types by Observations

Source	df	MS	F	p. <
Observation (A)	2	53.74	9.08*	.001
Error (SA)	26	5.91		
TOTAL	28			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 13), is significant at p.< .01.

for the observation factor. Removal of effects associated with the leading root for observations demonstrated that no significant discrimination remained. This significant multivariate test statistic for observations was followed up by univariate analyses of variance (ANOVAs) on the three story structure dependent variables. Means and standard deviations for these three dependent variables by observation are given in Table 54.

Table 53

Story Structure MANOVA in
Writing Context by Observations

Source	df	dfHYP	dfERR	F	p. <
Observations (A)	2	6.00 2.00	48.00 24.50	5.25 1.41	.001 .263
Error (SA)	26				
TOTAL	28				

Table 54

Means and Standard Deviations of Functions,
Function Types, and Moves in Writing Context by Observations

Observation	Functions		Function Types		Moves	
	M	SD	M	SD	M	SD
1	1.79	2.23	1.57	1.87	0.50	0.52
2	3.71	2.89	3.64	2.82	1.07	0.27
3	4.57	2.14	4.14	1.70	1.21	0.43

As shown in Table 55, significant univariate effects were obtained for the observation factor in writing on all three dependent variables.

1. Follow-Up ANOVA on Functions: As shown in Table 55, a significant univariate effect was obtained on the functions dependent variable for observations. Tukey's HSD Procedure indicated that the mean for observation three was significantly larger than the mean for observation one. A significantly larger number of functions was incorporated in children's written stories at the end of second grade than were found in their written texts at mid-grade one.

Table 55

Follow-up Univariate ANOVAs on Functions, Function Types and Moves in Writing Context by Observation

Source	FUNCTIONS df	MS	F	p.<	FUNCTIONTYPES df	MS	F	p.<	MOVES df	MS	F	p.<
Observation (A)	2	28.50	6.88*	.004	2	26.02	7.81*	.002	2	2.00	13.00**	.001
Error (SA)	26	4.14			26	3.33			26	0.15		
TOTAL	28				28				28			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 13), is significant at p. < .05.

** Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 13), is significant at p. < .01.

-86-

2. Follow-Up ANOVA on Function Types: Table 55 indicates that a significant effect for observations was obtained on the dependent variable function types. Tukey post hoc comparison of means (Table 54) showed that observation three differed significantly from observation one and that observation two also differed significantly from observation one. Children incorporated a significantly wider range of function types in their written stories both at the beginning and at the end of second grade than they did in the stories they wrote at mid-grade one.

3. Follow-Up ANOVA on Moves: Finally, Table 55 indicates that a significant text statistic was obtained for the observation factor on the dependent variable moves. Again, Tukey's HSD Procedure was employed to compare means (Table 54). These comparisons showed that only observation three and observation one differed significantly. Stories written at the end of grade two were significantly more complex than the stories children wrote at mid-grade one.

The Dictation Context

As indicated by Table 56, no significant multivariate effects were obtained in the dictation context for the observation factor. Consequently, no univariate analyses of variance (ANOVAs) were employed to follow up this MANOVA.

Table 56

Story Structure MANOVA in
Dictation Context by Observations

Source	df	dfHYP	dfERR	F	p.<
Observations (A)	2	6.00 2.00	48.00 24.50	1.20 0.23	.321 .795
Error (SA)	26				
TOTAL	28				

This combination of multivariate analyses of variance taken together with univariate follow-up procedures constituted the principal techniques we employed to obtain and probe developmental comparisons. One additional explanation of procedure may be in order at this point. When we employed univariate analyses of variance having repeated measures, Geisser-Greenhouse conservative F tests using reduced degrees of freedom were incorporated into these analyses. In repeated-measures designs, an assumption of homogeneity of covariance is made. To the extent that population covariances are heterogeneous, the F test is likely to be biased positively. The consequence is that the likelihood of a Type 1 error will increase as a function of the number of repeated measurements. That is, a probability exists that when the null hypothesis is true, the test of significance will reject it as false. The Geisser-Greenhouse adjustment protects a designated alpha rate even in the face of drastic violations of the homogeniety of covariance assumption. This protection for one-factor repeated-measures designs, for example, is accomplished by reducing degrees of freedom to 1 and n-1 (Geisser and Greenhouse, 1958). Thus, in all cases where we employed repeated-measures designs, the Geisser-Greenhouse correction was applied.

Are Stories Relevant Production Models for Beginning Writers?

Earlier we argued that action elements similar to those identified by the Russian structuralist, Vladamir Propp, were often found in children's fictional narratives (Botvin & Sutton-Smith, 1977, Rubin & Gardner, 1977, Applebee, 1978). Based upon this evidence as well as evidence that what children recall of stories skews toward a prototypic story form (Mandler & Johnson, 1977; Stein & Glenn, 1978), we hypothesized that these action elements provide relevant discourse models for beginning writers. We argued that fairy tale and folk tale models influence the production of stories in three ways.

First, the young storymaker must sustain a text in some cumulative way. The storyteller must produce a text containing the necessary elements of a genre. Just a relative handful of such elements would provide children with a flexible, cumulative basis for creating story plots, a genre most children know well.

The key to sustaining a text is repetition. Any function or group of functions may be repeated until sufficient volume has been created. For children, sustaining a text without the interactive support of a conversational partner is itself a challenging task. Simultaneously, the struggle to imagine and create elements of a plot, characters, texture, and a consistent narrative stance coupled with the mysteries of spelling, handwriting, and spatial organization also make enormous demands on processing capabilities. Repetition of functions potentially can restrict the range of action elements to be managed, and thus simplify the problem of text formation. Plot, character relations, narrative stance and texture may be held in check while continuing to maintain a story line. More attention can be devoted to actually producing a written artifact without sacrificing important narrative intentions. The following excerpt from a beginning second grader illustrates this use of repetion.

(1) Once there was a wicked old witch

(2) her name was treetop

(3) now she was a very very wicked old witch

(4) she lived on witch main street

(5) one day when she was walking down she saw a little girl

(6) and she said in her mind that she was going to eat her

(7) so the next day she took a little walk and saw the girl

(8) the girl said do you think she is going to eat me

.
.
.

(13) so the next day when she took her walk her mom came with her...

Once setting information has been established in lines (1) through (4), the repetition of the functions departure and villainy (potential) sustain this text throughout the remaining units. Repetition of any given function or combination of functions, thus, provides a means for sustaining a text. Having this capability would provide children with an important asset in helping them make the transition from face-to-face oral text production to solo written production.

Second, the availability of underlying abstract functions provides a limited range of options from which an almost limitless variety of stories can be generated. Particular sets of options serve as defining features for a genre such as the fairy tale. This ability to specify genres constitutes an important advantage of functions over more abstract story grammars. In addition, functions, linked as they are to the actions of characters, define not only the relations between a protagonist and events that make up a plot, but have the potential for defining relations among characters and thus the capacity for specifying multiple relations with events.

Third, logical pairings such as lack and lack liquidated or villainy and villainy nullified, comprise nuclear combinations or "dyads" which Botvin and Sutton-Smith, (1977) have described as basic building blocks in the development of narrative competence. These pairings, when combined in tandem or in parallel or when embedded one within the other, afford the storymaker opportunities for thematic reflection, permutation and variation. The principal advantage to be gained through such pairings is that of dimensionality. Using pairings such as these, children would possess the ingredients to create rather complex stories without making excessive demands on memory.

Very substantial differences among discourse contexts for all three story structure variables, demonstrated that production was clearly affected

by input factors and the availability or, perhaps, accessibility of information stored in memory. Retelling texts contained roughly twice as many functions and function types as dictated texts and about four to five times as many functions and function types as written texts. Both retellings and dictations contained significantly more moves than written stories. Quite obviously and expectedly, producing a written text makes enormous demands and places severe restrictions on composing capabilities. Over observations, a period of 16 months, only a significant overall effect for function types was obtained. When each discourse context was analyzed separately, however, significant effects for all three dependent variables were obtained only for the writing context. In the retelling context, just function types increased significantly over observations, and in the dictation context, no significant differences were obtained over observations for any of the dependent variables.

The finding that number of function types increased significantly over observations for both the retelling and the writing context suggests that developmental increases in the ability to comprehend and recall stories are accompanied by corollary increases in production capabilities. Recalling that the stories children retold at observation one and at observation three contained an equal number of function types, the differences observed in their retellings over this 16-month period cannot be attributed to input stories. Thus, comprehension and recall abilities increased significantly over this period and production abilities improved concommitantly.

Correlations between retellings and written texts on number of function types ranged from low (.34) at observation one to moderate (.53) at observation three; thus, these two tasks increasingly shared variance associated with an expanding range of function types. It seems reasonable to conclude that

the same developmental factors which were responsible for differences in retellings over observations were also responsible for the wider range of function types found in children's written texts over this same period of time. The variable function types, presumably, is rooted in exposure to folk and fairy tales or their fantasy counterparts found in television cartoons and serials as well as motion pictures.

Some appreciation of how much children's tales came to bear a clear resemblance to traditional folk and fairy tales can be gleaned from the following story written by a child at the end of second grad.

Unit		Function
(1)	once upon a time there was a bunny named Benjie	Setting
(2)	and she had magic powers	Magical Agent
(3)	one day she was walking in the woods	Departure
(4)	and a boy bunny appeared	"
(5)	and they went together for a walk	Translocation
(6)	and a man appeared with a big net	Reconnaisance
(7)	and he got the two bunnies and went in a big ship	Villainy
(8)	poor bunnies	"
(9)	they were caught now	
(10)	but right then the girl bunny tripped the man	Struggle
(11)	and they got free once again	Villainy Nullified
(12)	so the boy bunny thanked the girl bunny for saving him	Reward
(13)	the boy bunny asked the girl bunny to marry him	Equilibrium (Propp's wedding)
(14)	and she said yes	"
(15)	so they had six baby bunnies	"
(16)	and they lived happily ever after	"

The resemblance between this second grader's story and a fairy tale is a strong one. The range of functions included in this tale exceeds the range of functions typically produced by late-second graders. Yet, in other respects such as length, cohesive ties, number of functions, and complexity, this story is fairly typical of texts written by children near the end of second grade.

The evidence we have obtained about the role of stories in beginning writing development is far from decisive. It does provide weak but plausible grounds for believing that the comprehension and representation of stories in memory constitute rudiments of a rhetorical schema for composing stories during the beginning phases of writing development. Over time, children in our sample increasingly built narrative structures predicated upon function-like action units. As they wrote longer stories, they included more functions and a greater range of function types in their tales. The correlation between story length as measured by number of T-units, and number of functions over observations ranged from .61 at observation one to .92 at observation two and to .70 at observation three. Correlations between text length and range of function types, as might be expected, closely paralleled those for number of functions: observation one, .54; observation two, .90; and observation three, .75. Both sets of correlations indicated that functions and function types were measuring the same or nearly the same underlying capability relative to text length. But function types appeared to be a somewhat more sensitive developmental indicator than functions. These correlations with length suggested that as texts increased in length, they manifested greater breadth and range of storymaking capabilities and increased sustaining power on the part of the developing writers we studied. We think that familiarity with stories played a substantial role in this development.

Chapter 4

The Transition to Writing

Several years ago we began a longitudinal study of 42 kindergarten and 42 first-grade children seeking to discover how their text-forming strategies changed as they entered school and shifted from producing mainly oral texts to producing written texts. It is now four years later. We have analyzed data from the first two years of the study and are continuing to sort out and analyze data from the last two. More specifically, the text-forming strategies we wanted to study were those employed by children to relate various layers of meaning encoded in texts and those employed to build a rhetorical structure. Most earlier research on primary and intermediate grade children's writing, aside from the work of Graves (1975) and Clay (1975). had focused upon syntax (Hunt, 1965; Loban, 1976; O'Donnell, Griffin & Norris, 1967) or phonology (Read, 1971). Of course, Hildreth (1936) had studied the development of rudimentary aspects of children's writing from three to six years of age as did Wheeler (1971) for kindergarten children's beginning efforts to write. Our purpose, however, was to describe how children use cohesive ties to relate strands of meaning in their spoken and written texts.

In an earlier work (King & Rentel, 1979) we sketched a theory which attempted to account for several facets of beginning writing development. Briefly, we argued that what children bring to writing in the way of oral language, early concepts of the functions of written messages, their exposure to and their sense of stories, fundamental differences between written and spoken language and particular factors which influence production such as memory,

context, and audience affect the way children execute their communicative intentions. We noted that the decisions involved in an utterance entail different plans, depending upon the unit being planned. Basing our arguments on Chafe's work (1977a, 1977b), we hypothesized three levels of planning--schematizing, propositionalizing, and categorizing--corresponding to text units (schema, proposition and category).

At the first level of planning, schematizing, the speaker's or writer's task is to plan chunks large enough to convey a coherent unit of meaning, but small enough to constitute a unit of memory for particular instances and events. Story schema, as structured according to "functions" by Propp (1968) was chosen as the most productive means for examing the schemas employed by children.

Favat (1977) had argued that children's interests in traditional tales arises from their expectations of the relative invariant structures of such stories. In other words, children had a basis (schema) on which to make predictions. Moreover, work by Botvin (1977) and Botvin & Sutton-Smith (1977) indicated that children's stories did in fact include <u>functions</u> as defined by Propp.

We further argued that fundamental distinctions between speech and writing--which we will explore in detail later--would constitute the bases for expanding and refining these planning capabilities. Briefly, planning at each level would require realignment from the implicit, shared, dimensions of speech in situational contexts to the textual demands of writing where all meanings must be made explicit in the immediate text. We expected this realignment would be most clearly revealed through cohesion (Halliday & Hason, 1976), language's major resource for linking elements of a discourse. Cohesion is a range of possibilities by which meanings in a text may be related through

reference, substitution, ellipsis, conjunction and lexical cohesion. These devices specify the natrue of information to be retrieved when interpreting any particular segment of a text--which at the beginning stages of writing development children may assume to reside in a context of situation rather than in their text. We expected variations in context, content, audience and purpose would affect the kind and distribution of cohesive resources children employed at all three levels of planning. In particular, the proportion of references to context of situation should decrease while those confined to the text should increase as a function of learning to write. The need to embody relevant meanings within the written text, coupled with developmental increases in vocabulary (Clark, 1973, 1979), we expected would lead to expanded use of lexical cohesion, which, in turn, would affect propositionalizing and categorizing. We argued, therefore, that an understanding of beginning writing development necessarily should include an exploration of cohesion in children's oral and written texts.

Another major element of our theory was premised on young children's early writing intentions gleaned from their prior exposure to written texts and their sense of the purpose or function of writing. One kind of written text with which most children are intimately acquainted is the story. Given that a great deal of their experience with writing has been through stories, children are likely to assume that one of the major functions of writing is to tell stories. We anticipated that children incorporate this assumption into their understanding of general language functions (Halliday, 1973), that writing serves an ideational function--language's ability to characterize experience, and a textual function--language's ability to specify internally consistent relations within a text, comprehensible without reference to anything outside the text. Our notion was that, for children, stories are prototypic texts

clearly associated with writing whose function, form, and internal relations are reasonably well known to them. As a natural extension of this knowledge base, in their early attempts to write children will favor stories for schema planning. Of course, there are pragmatic considerations as well. Given that schooling is expected to produce literacy, language arts instruction usually offers children the opportunity to tell and write stories in the primary grades. Both schooling and their knowledge base incline children to plan schema in terms of familiar story and folk tale structures. As children learn to make stories of increasing detail and complexity, and acquire a deeper appreciation of the nature of written texts, their schema planning can be expected to become more formal, deliberate and conscious. In the beginning of writing development, though, such planning probably is intuitive and unconscious.

Developmental Aspects of the Transition to Writing

Learning to write has its roots deep in oral language development. Children's first tentative steps toward writing summarize this extraordinary accomplishment and retrace elements of earlier growth, all the while discovering and exploring similarities and differences between talking and writing. At the same time their experiences with language are extending toward print, children have begun also to experience a world beyond the home, the world of neighborhood, school and new acquaintances. And with this expanding world comes new opportunities to revise and add knowledge of every sort to nourish further growth. But there are constants, too. The familiar stories of bedtime crop up in new school guises as do routines, chores, denials, and assorted frustrations. Together, these ingredients comprise the context for learning to write.

Of the 36 kindergarten and 36 first-grade children studied, only 13 first-graders and five kindergarteners, 22 percent of all children, were able to write a story at the outset of the study. Sixteen months later, only one child still could produce no written text whatsoever. However, nearly all children were able to retell stories and most were able to dictate stories right at the outset of the study--some dictations, of course, based upon stories children had heard seen in film or on television. Many of the first texts children attempted to write were little more than statements or pictures with labels. Other children wrote texts but their texts had many of the earmarks of oral interactions with an assumed conversational partner. The first written texts children produced averaged less than three T-units in length. The texts they produced 16 months later averaged 10 T-units in length. Dictated texts, on the other hand, averaged 19 T-units in length at the outset and 35 T-units in length 16 months later. Both number of cohesive ties and number of function correlated strongly with text length. As stories grew longer and incorporated a wider range of story functions so also did they include increasing proportions of lexical cohesion and conjunction while declining correspondingly in proportions of restricted exophoric reference. By and large, dictated texts changed in the same way, although earlier than did written texts. Concommitently, story retellings reflected children's increasing ability to comprehend and recall stories. The range of story functions recalled was approximately twice the range children included in their dictated stories. Thus, the prediction that oral texts comprise a basis, both textual and structural, for learning to write received clear but modest support from these broad mode differences which diminished across observations.

Story structure data and cohesion data also indicated that children do, indeed, realign basic oral language strategies in the process of learning

to write. From the story structure findings, it can be concluded that children gradually acquire a knowledge of underlying story functions evidenced, increasingly, by their broadening storymaking capabilities in writing. This breadth is first manifested in their retellings, then, dictations, and eventually in written texts. Their stories not only came to reflect greater sensitivity to structure but awareness of necessary logical relationships among story functions as well. These abilities were accompanied by increasingly precise use of conjunctions to achieve relations of coordination, subordination, causality, sequence, time, and conditionality--precision essential to specifying relations among story functions. Both sensitivity to structure and conjoined logical indicators among functions, argue for a conclusion that children have learned to emphasize the ideational function of language in their texts.

The same close link exists between use of other cohesive devices and story functions--that is, between form and texture (Pappas, 1980). Ambiguous or exophoric referent items sometimes obscured who was participating in an action resulting in an uninterpretable story function. The following story partially used as an example in Chapter 3, illustrates this problem.

1 once there was a wicked old witch
2 her name was Treetop
3 now she was a very very wicked old witch
4 she lived on witch main street
5 one day when she was walking down she saw a little girl
6 she said in her mind that she was going to eat her
7 so the next day she took a little walk and saw the girl
8 the girl said do you think she is going to eat me?
9 now she was not sure she was going to eat her
10 but she had a big feeling she was
11 so she went on and on and on

In lines 9, 10, and 11, the ultimate referent of "she" is unclear. And the potential villainy is equally unclear. The story continues as follows.

12 when she got home she said to her mom "mom today when I took a walk I saw a witch--a real true witch"

13 so the next day when she took a walk her mom came with her so her mom would see her too

14 and they did see her

15 her mom got scared out of her wits

16 and they tore home and started to moan

17 one day the little girl got sick

18 and she threw up

19 that was the only time she was nice because she made her better

20 and she gave her a kiss

21 but she shouldn't have done that because all of a sudden she turned into a witch

22 and her mom did everything she wanted her to

"She" in lines 19, 20, and 21 probably refers to the witch who kissed the little girl causing the little girl to get well. On the other hand, "she" might also refer to the little girl and "her" to the witch whose villainous nature was bettered by the little girl's kiss. Either interpretation is made more difficult by the previous ambiguous referents in line 9, 10, and 11 in which the villainy was obscured. Too, note that conjunctions, which might have specified appropriate logical relationships between functions, are not sufficiently precise to do so.

Contrast the "witch" story with the story excerpt which follows.

1 once there was a bear who lived in the woods

2 he was lonely

3 he had only a few friends

4 one day he went to racoon's house

5 his friends were there

6 his friends were a squirrel, a racoon and a deer

7 he had no other ones

Personals, demonstratives, and comparatives combine to specify identity unmistakably. Setting information and the story function, departure, are equally clear. These two examples demonstrate that structure and texture are inseparable. Development appears to be premised upon pooling information from multiple sources.

The second example also illustrates the writer's awareness of the need to establish textual relevance in writing by expressing nearly all meanings through words. The cohesive relations of hyponymy and reiteration--embodied in friends, squirrel, racoon, and deer--coupled with explicit identity relations, realized through personals, possessives and comparatives, combine to make this story segment clear and coherent. This text, and others like it, are typical of the orchestration of lexical cohesion and reference in late, grade-two, written texts. Each set specifies a consistent relationship to a character, thing, event, or act and the classes and related classes of information to be found in the text. Proportional increases in endophoric reference and lexical cohesion indicate a fundamental awareness of the explicit textual demands of writing.

As children acquired a broader range of story functions in memory, their written stories increased in detail and complexity. Their deeper appreciation of structure also coincided with their expanding range of cohesive options giving support to the notion that writing development is integrally linked to children's ability to organize and interpret knowledge through dynamic,

prototypic schema large enough to convey coherent units of meaning, but sufficiently discrete to constitute memory units for events or stereotypic actions. These schemata eventually are differentiated into fixed and variable elements defining a genre. Our hypothesis was that these conventional models of discourse undergird planning in the sense of selecting and organizing information to be expressed and understood in a text. From this larger chunk, pertinent details are assigned a role and theme in events and actions constituting the larger schema. Cohesive devices, in turn, specify the information to be retrieved when interpreting any given segment of text, thus linking schema and propositions. Cohesive ties, therefore, also function as variables influencing selection of words and phrases. At best, our data suggest these planning dimensions. Indeed, production was affected by input factors and the availability, or perhaps accessibility, of information stored in memory. As demonstrated in the examples above, factoring out role and theme were obviously linked to cohesive resources available to the writer. And, textual identity and relevance required selection of lexical items from rather narrowly defined semantic fields. The pattern of developmental increases we observed weakly supported our explanation of planning; however, only experimental evidence can settle these process questions. Our descriptive data merely point to an interesting set of possibilities.

Factors Contributing to Developmental Variation in the Transition to Writing

The factors which influence learning to write are highly interactive. These interactions range from contextual to constitutional contingencies as learning cumulates over time. Our goal was to separate important sources of variance from this flux. Our expectations for establishing unambiguous causal

relations were modest. Instead, we hoped to describe the emerging histories of children whose backgrounds and schools differed substantially, through successive, regular well-timed observations which incorporated slight manipulations in discourse modes and tasks. These manipulations were designed to capture broad, global, characteristic similarities and differences among the populations studies. We expect that our subsequent analyses of cohesion and text structure will tease out basic trends in writing development. The studies reported here deal only with global characteristics. These global characteristics were: school, grade, sex, socio-economic status, and dialect. Discourse mode and grade-level variation have already been discussed. In this section we will consider school, sex, and dialect variation, the latter, tied securely to socio-economic status.

School variation. Both kindergarten and first-grade populations at the urban school differed from their counterparts at the suburban school with only middle class children included in the comparison. These two levels of school populations differed only on the writing comparison, suburban school males in kindergarten using higher proportions of reference than suburban females or urban males and females; suburban school first-graders using higher proportions of lexical cohesion than urban school first-graders. Differences in kindergarten reference proportions can be attributed confidently to atypical scores for suburban males--an effect that is easily explained. All suburban, kindergarten males produced a written text at observation one while only two suburban females did, only one urban male produced a written text and all urban females did. Suburban boys included mainly "setting" information about characters--information which required specification of text identity entailing use of reference ties. Urban girls, on the other hand, also included mostly setting information in their texts,

but, unlike suburban boys, urban girls also employed reiteration to achieve textual relevance which entails use of lexical cohesion. Suburban kindergarten boys, therefore, employed very high proportions of reference ties in their first written texts while urban girls employed roughly equal proportions of reference ties and lexical ties in their first written texts.

Overall, first-grade and kindergarten children at the suburban school employed higher proportions of conjunction and lexical cohesion in their written texts than urban children. To the extent that school differences are implicated in these effects, the following factors may be involved. At the suburban school, every effort was made to integrate reading and writing around focal interests and long units of study. Some small group and individual instruction was given in reading. A great emphasis was placed on literature and the use of a range of books, both fiction and nonfiction, in all learning activities. Literature was also studied for itself. Teachers frequently read aloud to children, discussed books with them and often organized books for study around a common theme, concept, author or illustrator. This curriculum provided substantial opportunities for purposeful exposure to written texts, particularly stories. On the other hand, individual teachers at the urban school had considerable lattitude in determining the type of literacy instruction employed. Emphasis was on skills--in word recognition, handwriting, and spelling. A wide range of textbooks, audio-tapes and duplicated materials was used in teaching reading--usually at the discretion of the teacher. Toward the end of the school year, more attention was given to the content of children's writing, to exposing children to clusters of books and stories, and to reading aloud to children and telling stories. Lexical cohesion and conjunction differences may simply be a reflection of

the suburban children's earlier, more consistent, purposeful exposure to stories which resulted in a developmentally earlier realignment of textual functions and strategies.

Sex variation. Girls and boys differed only in writing and mainly at the first grade level. These first-grade differences mainly involved use of lexical cohesion. At the kindergarten level, boys at the suburban school used higher proportions of reference in their written texts, a finding which was discussed in the previous section on school differences. First-grade girls employed lexical cohesion proportionately more than first-grade boys, whether because of rate differentials in vocabulary acquisition, or because of specific differences between boys and girls in text-forming strategies employed to achieve textual identity and relevance. Answers to these questions must await further detailed analyses of lexical cohesion.

Dialect/socio-economic status variation. Within the urban school, middle-class, nonvernacular dialect children were compared with lower-class vernacular dialect children. Cohesion differences between these populations, without exception, were limited to written texts. Within the kindergarten population, middle-class, nonvernacular children employed higher proportions of lexical cohesion in their texts than lower-class, vernacular children. When both kindergarten and first-grade populations were included in the analyses, overall means for writing were higher for nonvernacular children on both ellipsis and conjunction proportions. When only first-grade children were included in the analysis, reference and ellipsis means in writing were higher for nonvernacular children than vernacular children.

Mean differences for lexical cohesion in the urban kindergarten population stem from the fact that fewer nonvernacular children wrote texts at the

outset. Only one vernacular, kindergarten child wrote a text at observation one while four nonvernacular children wrote texts. Mean dialect differences for lexical cohesion in the urban, kindergarten, written texts persisted over observations. Whether these differences stem from acquisition differentials or from differences in ways of creating textual relevance cannot be determined from comparisons of lexical cohesion proportions. To explain these differences, frequencies of particular lexical ties, each type having specific implications, will be compared in later studies. What can be said now is that these two populations of kindergarten children appear to employ different text-forming strategies--nonvernacular kindergarten children relying more on lexical devices than vernacular children to produce written texts. The finding of no lexical cohesion differences between these kindergarten populations in dictation probably rules out acquisition differentials as a tenable explanation. The more likely explanation is that these vernacular and nonvernacular children employed different lexical means for creating textual relevance. The absence of lexical cohesion differences in writing between first-grade dialect groups indicates, however, that, whatever the source is, lexical cohesion differences subside by the end of grade two.

But, dialect group differences for reference and ellipsis did emerge in first-grade writing. The nonvernacular group mean for reference proportions in writing was .46 while the vernacular group mean for reference was .24. Again, no dialect group differences were observed in dictation. Ellipsis means were also higher for the nonvernacular group in writing, but no dialect group differences for ellipsis were observed for dictation. Ellipsis proportions were very low and, as noted earlier, were largely confined to texts containing dialogue. In all likelihood, this style difference

accounts for the dialect group difference for ellipsis. Reference differences are not as easily explained. Differences were large and are probably an indication of different strategies for achieving text identity, but only further analyses of particular reference ties can reveal just what these differences are and what their ultimate explanation is.

Dialect group differences for story structure are difficult to interpret. More recent analyses (See Appendix D) of kindergarten story structure data--the dependent variables, functions, function types and moves--indicated only dialect-group differences for retellings in the kindergarten population for number of functions and number of function types. Consistent first-grade, dialect-group differences were indicated for all three dependent variables in both dictation and retelling. Patterns of difference over observations indicate that both vernacular and nonvernacular groups experienced comparable increases but maintained initial relative differences between them for all three dependent variables. Retelling differences, particularly, may have been either a result of middle-class, nonvernacular children having had broader exposure to stories in general, or the result of middle-class, nonvernacular children having had broader exposure to the kinds of folk and fairy tales read to children participating in the study.

Longitudinal Studies of the Transition to Writing

The structure in which scientific knowledge is created is relatively straightforward and simple. The scientist merely asks, "How are two things related?" "Under what conditions do they affect one another?" "What is a reasonable explanation of these relationships and effects?" The scientist's logic, attitudes and traditions of peer review are his major defenses against error. Aside from the ways in which conditions and things are controlled,

scientific methods differ mainly in nuance. At the heart of the enterprise is reasoning of the form, "if p, then q." At the end is an empirical test of the validity of the scientist's explanations. The most creative aspect of science is determining what p and q are.

Longitudinal research is one method for asking questions and submitting them to empirical tests. Its advantage and disadvantage is that things come to the researcher in their natural states where both things and their relationships are difficult to sort out. Since a necessary first step in science is to determine what to observe, that is, to delineate the dependent variables of the phenomenon under study, some consideration must be given to how these variables are to be selected. Our arguments above, of course, led to the selection of cohesive ties and elemental functions in fairy tales as variables salient to the transition from spoken to written texts. But aside from the arguments given, were there other reasons that influenced our selection? Both cohesion and story structure promised to be sensitive to the sorts of manipulations permissible in the on-going life of classrooms--sensitive because we could reliably observe them in the protocols children produced and we had a fairly full grasp of their theoretical significance. The conditions for learning to write were very clearly defined by the existing curriculum in the schools we studied. Obviously we had little choice in that matter. But we could establish or easily devise ways of assessing a child's status with respect to these variables and thus characterize the emergence of the ability to write under specified conditions. These conditions we attempted to describe fully and clearly.

The factors which influence learning to write are enormously complicated and highly interactive. Unravelling the sheer number and kinds of interactions

ranging from contextual to constitutional contingencies as they cumulate over time is a staggering problem. Our initial aim was to separate relevant independent variables from this flux. We had little or no hope of determining causes. What we did have, however, were children whose histories and achievements typically differ dramatically--poor inner city black children and affluent suburban white children--and in that inner city magnet school, a population of affluent, middle class, white children. By focusing upon their emerging histories through successive, well-timed observations which incorporated ever-so-slight manipulations, we hoped to ensnare rather large global attributes at first. Subsequent studies, designed to sift the data from these observations through finer and finer analyses, will provide us with a fuller more complete picture of the factors that contribute to growth in writing ability. As stated earlier, we have identified the following global characteristics : school, grade, sex, socio-economic status, dialect, and discourse context.

The ultimate purpose of any kind of educational research, of course, is the compilation of knowledge necessary to guide educational theory and practice. The goals of educational research, regardless of type, are to minimize harmful or wasteful experience and maximize the probability of optimal development for each student. When all goes well, there even may be the potential in educational research for making contributions to basic knowledge. Research on writing shares these purposes and goals. Like educational research in general, research on writing shares also many of the fundamental difficulties encountered in school related inquiry.

Not the least of these problems is that of obtaining reliable and representative samples of data. Most learning contexts and all school settings are complex interactive social entities. We would like to propose two

safeguards against error arising from these difficulties. First, that to the extent possible, observations or measures of attributes of writing be set within the fullest theoretical backing available. Where theoretical backing is weak or lacking, then the most stringent protections available should be applied to the analysis of data and great care taken to restrict generalization. Second, that multiple measures or observations within varying contexts--that is, sampling of several sorts from the population of situations where writing is likely to occur--be taken. Our work thus far has demonstrated to us that there is an ebb and flow to writing development linked intimately to situations and population groupings. And there are individual eddies in this swirling current. There is an old and familiar nursery verse that begins, "Monday's child is..." and ends with "Sunday's child..." We have learned to expect this variability in each child.

The major drawback in our research, as in all longitudinal research, is the inability to draw strong causal inferences from our data. It is not possible in any sense with our data to do more than describe the status of our various populations at given points in a developmental trajectory. The value of longitudinal data is the control exercised over within-subject differences. Stable differences among subjects can be identified in a way that is reasonably free of this within-subjects error. The power of our data and of longitudinal research in general is its firm link with reality and its potentially strong developmental effects. These links and effects can blaze a trail for more compelling and causally persuasive experimental research. In this sense longitudinal studies of writing development constitute a productive approach to theory and inquiry: longitudinal research can and often does serve as an important source of reasonable experimental hypotheses. And,

at a very practical level, longitudinal studies set out clear developmental beacons that teachers may follow in shaping their expectations for curriculum and instruction.

Chapter 5

Transition to Writing: A Case Study

This report is a study of the development of Jwan's writing abilities from the end of kindergarten through the end of first grade. Jwan is a black, lower class child. When data were first collected, Jwan was five years old and a member of a kindergarten-first grade classroom. This group of students was housed in an open area and contained approximately seventy-five students and three female teachers. During the 1979-1980 school year Jwan moved to another kindergarten-first grade classroom which was in an open area that housed approximately fifty students and two female teachers.

The data for this case study were collected in the Spring of 1979, in the Autumn of 1979, and in the Spring of 1980. One story retelling, one dictated story, and one assigned writing were collected during formal data collection in each period. Samples of unassigned or continuous writing were also collected during each period.

The development of text cohesion and story functions will be described for each mode. The development of these devices will also be compared across modes and will be related to the child's attitudes about writing and to the context in which the writing occurred.

The Development of Text Cohesion

Story Retelling. Jwan's first story retelling was short, only six T-units in length, and was characterized by a high incidence of exophoric reference, or those references to persons or things which were not specifically stated in the text. This use of exophora assumes the audience's knowledge of information not contained in the text. Jwan was told that the listener to his retelling had no prior knowledge of the story, but he was unable to make all references explicit within the text.

Jwan did use two endophoric references, or references to items within the text and two repetitions of lexical items. He connected his ideas with the conjunctions and and then. Infrequent use of cohesive devices and the frequent use of exophoric references produced a brittle text with little cohesion. The following example will illustrate this point.

1 the wolf gonna eat the duck
2 and he said there was a piece of cheese
3 and there was a moon
4 and the duck got a spanking
5 and she asked him to be a good little duck
6 then he went to bed

Figure 10. Retelling of Squawk to the Moon Little Goose

Jwan's second retelling was longer than the first and slightly more coherent. His use of exophoric and endophoric references were equal, and he used more lexical repetitions than the first sample. He continued to connect his ideas with simple additive conjunctions. This retelling is more understandable than the first.

1 they had no food
2 they only had a piece of bread
3 and then the little girl went out in the forest
4 and a old lady gave her a magic pot
5 ((sp: unknown)) "stop boiling little pot"
6 and then the pot kept on boiling
7 then she ran down the street
8 and then the girl said the word
9 and then it stopped
10 and then they had a lots of food for everyone

Figure 11. Retelling of The Magic Porridge Pot

The final retelling indicates a reversion to the earlier means of developing a text. Exophoric references outnumber any other single cohesive device used, and they approach the total number of all other cohesive devices used. There are only three endophoric references. Cohesion is established through lexical repetition and simple additive conjunctions.

1 the boat sunk away

2 and the boy was eating the salt

3 and all the children was looking at the giant

4 and the little boy was fibbing about him

5 the giant say you can tell all you want about me

6 and the little boy got married

7 and the people tore up the boat

8 and the boy was staring at them

9 then the boy went sailing off with the boat again

Figure 12. Retelling of Salt

This pattern of text cohesion indicates a lack of awareness of audience and an inability to create an independent text. To fully understand many of the references that Jwan used in his retellings, the audience must have knowledge of the original story.

Jwan consistently depended on conjunctions (and, then) to link units of his text. The number of lexical items that were repeated in his texts indicated that he had added reiteration to his text-forming strategies.

Jwan's story retellings are brief and are lacking the necessary information to make them coherent. Over a year's span Jwan showed little development in his ability to create cohesive retellings of given stories.

Story Dictation. Jwan's first and last story dictations were similar in length and in content. They were also similar in that the only exophoric references used refer to Jwan himself. There is a greater use of endophoric reference in his dictations. Since both of these dictations are brief, there are only two conjunctions in each piece. These continue to be simple additive conjunctions. Jwan also used lexical repetition resulting in brief but cohesive texts.

A	B
1 I play with my daddy and my dog	1 me and my friend Artez ride on big wheel and bike with one hand
2 and my dog chase me and bite me	
3 I run out on the road	2 and we always race
4 I like to play with my friends	3 and I always beat the race
5 and one is Bobo	

Figure 13. Dictation: Spring-Kindergarten; Spring-Grade One

The story Jwan dictated in the autumn of 1979 was much more elaborate and more fictional than the examples just given. Within this story, the number of endophoric and exophoric references was equal. However, many of the endophoric references were ambiguous so the meaning became obscure in parts of the story. In the following example Jwan used simple additive conjunctions and lexical repetitions to create textual cohesion.

1 they was fighting

2 and Joker got knocked out

3 then they went back to their bat cave

4 then they got in their batmobile

5 then they zoomed off to the Joker's hide out

6 then Batgirl jumped in and started fighting with Batman and Robin

7 and then Batman and Robin Superman Spiderman they were all having cars Superman Spiderman Batman and Robin

8 and they zoomed over a house eeerrrkkk

9 then they were home

10 then they slid down the post and turned back into Batman and Robin and left the Joker home again

11 then Joker in the middle

12 then Catwoman jumped in

13 and she tried to jump across that thing

14 and she fell down in it

Figure 14. Dictation: Autumn-Grade One

In Jwan's dictated stories, endophoric and exophoric references were used equally as often. He relied more on lexical repetition and conjunctions as text-forming strategies. It is interesting to note the increased length of text and the imaginative style of Jwan's Autumn dictation. This story is a sharp contrast to the Spring, 1979 and the Spring, 1980 dictations.

Assigned Writing. It was impossible to analyze Jwan's assigned writing samples for cohesion because he produced no texts. His writing consisted of drawings and experimentation with letter forms. The Autumn, 1979 sample contained the most writing. It was a list of words copied from parts of his classroom.

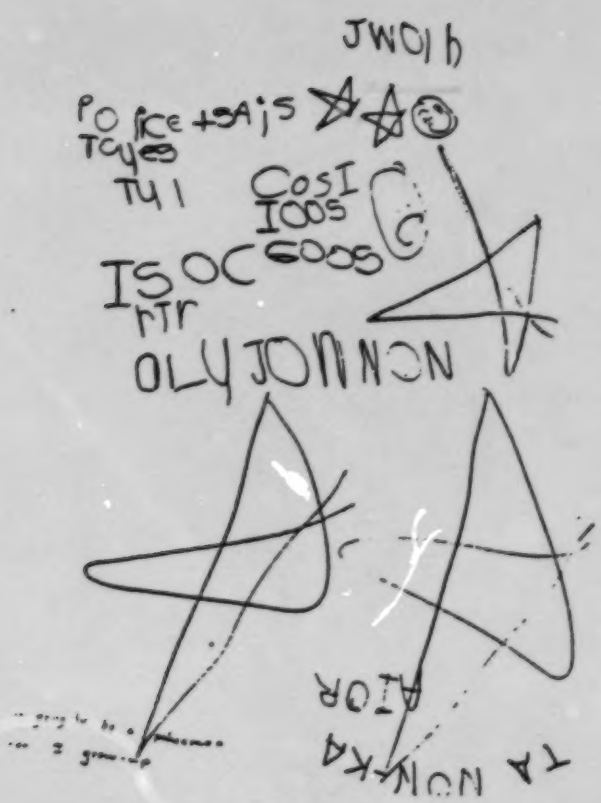

Figure 15. Writing: Spring-Kindergarten

Although no text was produced, Jwan's writing showed that he had a good concept of letter and word, and that he was aware of print around him. As the following examples show, Jwan's early writing was more of an effort to make a product than a means of communicating a message. This type of writing represented one of his first steps in becoming a writer.

Figure 16. Writing: Autumn-Grade One

Jwan's last writing sample consisted of words copied from books combined with some of his own words. He sequenced words; showed his knowledge of left-right directionality, spacing, and top to bottom sequencing. He was also beginning to create original spellings for words and there was some effort to convey a message. Jwan seemed to be at the very beginning stages of writing development. He was slowly moving toward developing written texts.

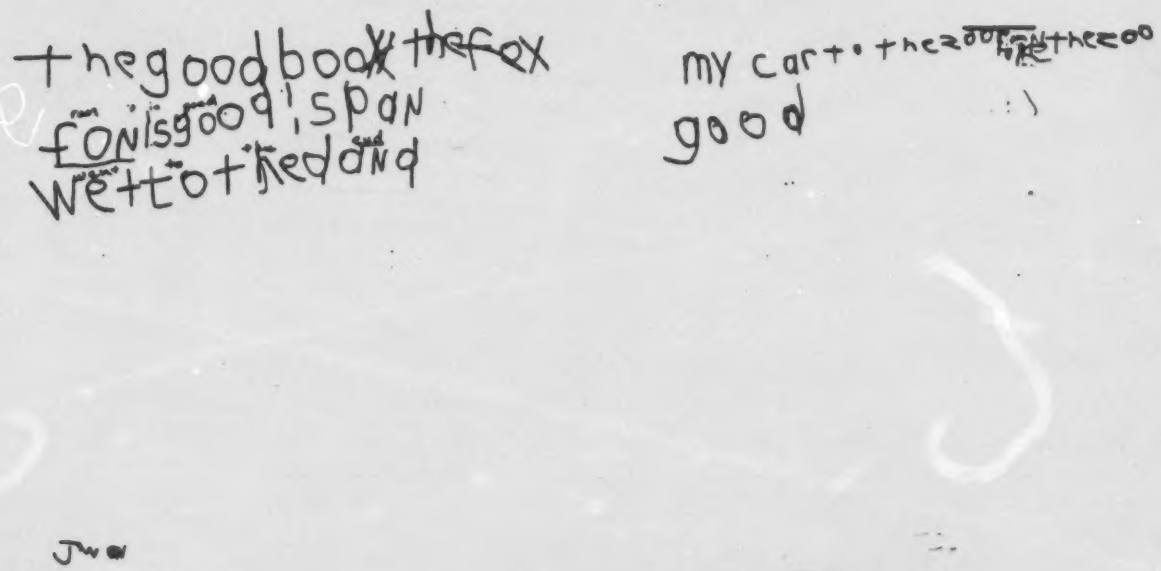

Figure 17. Writing: Spring-Grade One

Summary Jwan's story retellings and dictated stories were marked by his use of exophoric reference. This type of reference seemed especially prevalent in his story retellings. The use of exophoric reference indicated that Jwan was not clearly aware of the needs of his audience and the textual function of written language. He seemed unable to decenter enough to provide

his audience with the information that he possessed. Much of the cohesion in Jwan's stories resulted from his use of conjunctions and lexical repetition. Jwan's ability to retell and dictate stories surpassed his ability to write his own stories. However, his writing demonstrated progress toward creating written texts. Jwan's oral abilities exceeded his written abilities at this stage of development.

The Development of Story Functions

Story Retelling Jwan's retellings were characterized by use of relatively few story functions. The actions of story characters seemed fragmented and unrelated. In Jwan's first retelling of Squawk to the Moon Little Goose, certain aspects of story function appeared. There was a statement of attempted villainy which was not clearly resolved in the retelling. Punishment occurred but it was punishment of the story hero, not of the villain. This rebuke of the hero led to restoration of equilibrium at the end of the retelling (See Figure 10).

The second retelling incorporated a more complete sequence of story functions. Jwan clearly established the function of lack in the first two units of the retelling. Lack was followed by departure of the hero and an encounter with a donor through which the hero received a magical agent. After the receipt of the agent, the sequence of functions broke down. The final line of the retelling liquidated the original lack and restored equilibrium. Figure 11 demonstrates the sequence of functions just described.

Jwan seemed confused as to what events occur after the hero receives the magic pot. Functions became unclear until final equilibrium was restored. Jwan was able to resolve the initial problem and to end the tale.

The final retelling that was collected from Jwan had no clearly defined story functions. This production was a list of isolated fragments of the story. There was no clear beginning or ending, and there was little relationship among the events listed (See Figure 12).

Jwan's story retellings did show an awareness of story functions. He seemed interested in ending his stories in a state of equilibrium even if the body of the story contained unrelated functions and no clear sequence. Jwan was beginning to create story functions, but at this stage, he often abandoned the functions before they were resolved.

Story Dictation Only one of Jwan's dictated pieces was a story which contained story functions. This story was collected in Autumn, 1979 (See Figure 14). There was not a well defined beginning to the story; it opened with a struggle without any preceding lack or villainy. The struggle moved to a departure of the characters, then, to another struggle followed by the characters moving to another setting. The story ended with one of the characters experiencing a misfortune. There was no precipitating lack or villainy necessary to form a complete tale. This dictation was a series of beginnings of functions which lacked the necessary structure and sequence that define a tale.

Assigned Writing No story functions appeared in Jwan's writing.

Summary Jwan was beginning to include story functions in his story retellings and dictations. More functions and more complete sequences of functions occurred in Jwan's retellings of stories, but they were altered and reorganized. Only one of Jwan's dictations contained crude functions, but no functions appeared in his writing. As with cohesion, Jwan's oral abilities to use story functions outstripped his written abilities at this point in his development.

Unassigned Writing

Jwan did not write very much on his own. His early writing consisted of drawings with labels and lists of copied words and letters. He occasionally copied sentences from a chart that the teacher prepared daily. He also copied words and phrases that were posted in the classroom. By June, 1980, Jwan was beginning to create original sentences. These often consisted of repetitive writing like the following example:

I like pups
I like a
I like fish

This type of writing was beginning to appear on the same page as copied words and phrases. Jwan was still in the very early stages of writing development, but he was beginning to break through to literacy by copying writing which existed in his environment and by adding his own words and letters to that writing.

Attitudes About Writing

When interviewed, Jwan revealed that he did not like to write and that he did not think he could write. When asked to give reasons for writing, he could give none. He stated that he did not write very often and could name no occasion to write in school. Jwan considered writing in school to be a purposeless, meaningless activity that he should avoid.

Jwan did state that he wrote at home with his father, and they would sometimes write notes to his teacher. When asked why he wrote to his teacher, Jwan stated matter of factly that he needed to tell his teacher something, but she was not there. This statement clearly showed Jwan's awareness that writing can convey meaning; however, oral language was preferred over written

language. Jwan had difficulty relating writing that he did at home to the kind of writing that he did in school. They were almost two different systems to his way of thinking.

These attitudes may aid in understanding Jwan's development in story retelling, story dictation, and writing. These tasks may not have been meaningful to Jwan; therefore, Jwan may have not related them to his private, purposeful concept of writing at home but may have related them to his concept of writing at school.

Context for Writing

For the 1979-1980 school year, Jwan was a member of a kindergarten - first grade group of fifty children and two teachers. This was a highly verbal classroom. Directions and interactions were usually verbal. In this classroom, written language was secondary to oral language.

The writing that children were exposed to was primarily captions or simple statements. Pictures with labels hung on the walls. Posters and banners with a few words or phrases decorated bulletin boards. Printed rules were posted. There was very little writing that was elaborate or expressive. Neither the children nor the teachers needed writing to work in the classroom. Therefore, little writing developed in the classroom.

The classroom teachers verbally valued children writing in the classroom, but they found it difficult to operationalize their values because their priorities were focused on helping the children complete predetermined tasks and to work responsibly in learning centers. Often a child's request for a teacher to read what he had written was ignored or denied. The teachers did not realize the importance of responding specifically to the child's

composition in terms of meaning. Many children would not initiate their own writing because they felt other behaviors were more pleasing to their teachers. Teachers occasionally encouraged children to write, but they often did not encourage the children's efforts.

This was a busy, productive classroom where children were free to talk and move and interact with each other. Books were present in the classroom, and a story was read daily, but books and writing did not pervade the curriculum. Printed materials were not related to the ongoing activities in the classroom. Books, printed materials, and children's own writing were rarely used as resources for the children. If used, these materials usually remained in the teacher's domain.

Little writing occurred in this classroom because writing was not integral to the life of the classroom. Because of the many demands of the curriculum on these teachers, they were unable to create an environment where writing was necessary and purposeful. There were few reasons to write in the classroom so little writing occurred.

Conclusion

How a child develops his writing abilities seems to be closely related to his mastery of oral language, his ability to create a sustained oral narrative, and his knowledge of story structure. The child's own attitudes about himself and writing, and his opportunities to interact with written language and to write also seem to influence how writing develops.

Jwan's abilities to retell and to dictate stories exceeded his abilities to write his own stories. His retellings and dictated stories improved from Spring, 1979 to Autumn, 1979 and then seemed to regress to their original

level in Spring, 1980. His writing developed very slowly, but did progress steadily from Spring, 1979 to Spring, 1980.

Jwan's reasons for writing and his opportunities to write were limited within the classroom context. Limited opportunity and lack of confidence in himself as a writer influenced the quality and quanitity of Jwan's writing. Schooling must provide both reasons and rewards for writing. Time to write without interruption, and a place for writing to occur are important to writing development. Jwan's developing writing abilities must be supported by a nurturing context if he is ever to develop into a mature writer.

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APPENDIX A

Procedures of the Study

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Procedures of the Study

The purpose of this study was to describe the transition children make from oral to written texts, in respect to their use of cohesive devices in two modes of oral, and one mode of written, language, and their inclusion of particular story structure elements in the same three modes. The approach chosen to realize the goals of the investigation was a longitudinal study of two groups of subjects:

36 children, grade 1 through 2

36 children, kindergarten through grade one

The two populations permitted both, cross-sectional comparisons between groups as well as longitudinal comparisons over a period of 16 months. This report, however, will describe only the grade one through grade two population, as required in NIE Grant 79-0039. This population was stratified by sex, school, dialect and socio-economic class. They were observed at three-month intervals, across three modes of discourse: writing, dictation, and story retelling. These three contexts were expected to influence the production of texts differentially over the five observations, yeilding comparisons in the number and kinds of cohesive ties employed in each mode, as well as comparisons of the structural characteristics of texts produced in each mode.

Selection of Subjects

To study writing, a first essential was to select schools and classrooms in which the curriculum encouraged writing from children during the first two years of school. A second necessity was to locate schools where research associates could easily move in and out of classrooms to collect data and/or work with individuals or groups of children. A third requirement was to identify schools which reflected the characteristics of urban and suburban schools in America including, particularly, the language and socio-economic differences which prevail in these schools--because both, language and socio-economic factors have been implicated as important factors in school achievement.

The urban school selected as a site for this study contained a population of Black children from the neighborhood and a sizeable population of white middle class children transported to the school by bus. This fortuitous situation allowed us to observe children whose social backgrounds differed substantially, and who had in common a new kind of educational environment. Choosing a suburban school allowed us to compare the middle class children in the urban school with a like population in a different setting. A more detailed description of the schools, hereafter referred to as Urban and Suburban, follows.

Urban School

The Urban school, designated as an alternative school, is located in the central area of a large mid-western city, and it provides schooling for children pre-kindergarten to grade six. It is an open-space school with multigrade groupings in each work area. The school avoids grade level labels and, thus, each large classroom space is referred to as the Red Area, the Blue Area, or the Yellow Area.

The first year our first-grade subjects were located in the Red and Blue areas and distributed across five teachers. The Red Area housed kindergarten and grade one pupils, and occupied two separate but connected classrooms. The Blue Area was a vast wall-less carpeted space that was open to the library, located a half-flight above. There were three teachers for the 90 children, two aides, and two special reading teachers.

The teachers planned jointly and often brought the children together for large-group activities. Most of the work, however, was individualized or accomplished through small-group instruction. A very strong part of the program was the opportunity children had to talk with peers and with adults. The children had the benefit of special teachers in physical education, art, music and drama, as well as the help of students from local colleges, who were at various stages of teacher preparation.

Because of its location in the downtown area, Urban used the nearby community resources (e.g., art gallery, Center for Science and Industry, and businesses) as an extension of the classroom. Children in the Blue Area frequently took walking trips to places of interest.

Children from any elementary school in the city may make application to attend Urban School. While children in the neighborhood are given priority, there is an attempt to make the school population reflect the school system, as a whole, in terms of racial background, achievement, and socio-economic status.

During the first year of the study, the 24 subjects in Urban were distributed across five class teachers. The following year they were located with six different teachers, and in three work areas:

Teacher:	CC	MB	MS	DH	SB	BS
	6	3	4	7	2	6

This distribution, of course, made observations and work with children extremely time consuming and data collection very complex. While teachers were similar in their concern for children and their learning, they differed greatly in teaching style, approaches to literacy, and interest in children's writing. They were not expected to follow a set course of study in reading and writing, but rather, were in the process of developing one for their school. While this gave the teachers and children a great deal of freedom, it meant that the curriculum was ever chinging and not very predictable. Emphasis in

literacy instruction was on skills--in word recognition, handwriting, and spelling. A wide range of textbooks, audiotapes, and duplicated materials were used in teaching reading--usually at the discretion of each teacher. For instance, one teacher used experience stories written on charts, as a means of teaching reading.

Over the 15 months of the Project, change in emphasis and materials did occur. More attention was given to the content of children's writing, to exposing children to clusters of books and stories of a similar genre, and to reading aloud to children and telling stories.

Suburban School

The Suburban School was located in the oldest part of the most affluent suburb in the metropolitan area. It too was an alternative school for parents in that city who wanted their children to be educated in an environment that was less formal and prescriptive than that existing in most schools in the district. The school, which served a population of kindergarten through grade six, was housed in three separate buildings or "pods," each consisting of four classrooms. The school was located on the same grounds as the oldest elementary school in the district. Some facilities (library, playground, gymnasium) and resources (special teachers and health services) were shared, but the administration and curriculum were separate.

For almost a decade a core of teachers and the principal of the Suburban School had been studying and implementing informal or progressive approaches to educating children. The classrooms were arranged with work areas, including resource centers with materials for art, mathematics, and science; book and quiet reading areas; and open spaces where the class could meet as a group. Most instruction was individualized or conducted in small groups. The children were free to move about the classroom and to work with one or two friends; thus, peer teaching/learning became an important element in the instructional process. Every effort was made to integrate the curriculum which was organized around focal interests or longer units of study. The first grade, for example, typically studied foods and visited a super-market and distribution center. The second/third grade class pursued interests in witches, horses, plants, and the human body. Reading and writing were usually integrated with these projects, but some small group and individual instruction was given to reading. A great emphasis was placed on literature and using a range of books, both fiction and nonfiction, in all studies. Literature was studied for itself too. Teachers frequently read aloud to children, discussed books with them, and often organized books for study around a common theme, concept, author, or illustrator.

The teachers varied, of course, in their understanding of integrated learning and ability to implement the concept. They varied also in their beliefs about effective ways to foster literacy. When the Writing Project began, the subjects in mid-first grade were distributed across two classrooms: one was a kindergarten/first grade; the other, a first/second grade. In both classes, teachers used a modified language experience approach in which experiences were charted. In turn, these

charts often were copied by children. Great emphasis was placed on correct spelling and capitalization, so lists of words in manuscript writing were made available to children before they began any personal writing. This emphasis changed over time as teachers saw that children had more spelling ability than they had been able to use and that they wrote more and better texts when freed from spelling constraints.

The second year of the study the subjects were again distributed over two classrooms, both containing pupils in grades two and three. Again, the teachers differed. One placed strong emphasis on language and literature, and the other emphasized science and physical activities. Both, however, participated enthusiastically in the study and appreciated the growth in writing they saw their children experiencing.

Subjects (24) were drawn from the first grade of an "alternative" school, an elementary school so designated because of its open enrollment, open-space, and open curriculum. This school was atended by children not only from a largely Black neighborhood with an SES distribution ranging from low to lower middle class, but also from middle class neighborhoods throughout the city. An additional sample (12) was drawn from the first grade of a suburban school with a Socio-economic Status (SES) distribution ranging from middle to upper class. From the former population, 12 subjects were identified as vernacular Black dialect speakers, using the revised measure of standard English proficiency noted above ($\underline{M}$ = 21.67; $\underline{SD}$ = 5.99). Subjects scoring ten or more on this measure were assumed to be vernacular Black dialect speakers.

Identifying Black-Vernacular Speakers

We hypothesized that dialects or codes may be related to exophoric reference. Evidence suggests that speakers of Black English vary considerably, both as individuals, and as a group, in the number and kinds of forms they produce in varying circumstances (Carroll and Feigenbaum, 1967; DeStefano, 1973; Dillard, 1972; Labov and Cohen, 1967).

To assure that subjects spoke vernacular Black English, three alternative screening techniques were considered: (1) technical detailed linguistic interviews (Labov, Cohen, Robins, and Lewis, 1968; Fasold and Wolfram, 1970); (2) semi-informal interviews (Shuy, Wolfram, and Riley, 1968); and (3) sentence repetition tasks (Garvey and McFarlane, 1970; Politzer, Hoover, and Brown, 1974; Rentel and Kennedy, 1972). Given the inter- and intra-subject variability noted above, sentence repetition tasks were employed because these tasks discriminate among subgroups on items where a difference exists between the form presented, and a form habitually used by a subject and offered as a substitute, with relatively high reliability (Garvey and McFarlane, 1970). In addition to the advantages of increased discriminability and reliability, sentence repetition tests require less time and less exacting training for their proper administration. Ten structures from the Garvey and McFarlane

scale with reliability coefficients greater than .55 were selected and included in the scale, (four repetitions of each structure) for a total of 40 items (see Appendix A).

Determining Socio-Economic Status

During the first few weeks of the study (February 1979), the socio-economic status of those children for whom parental permission forms were received was determined by using a modification of the Index of Status Characteristics (Warner, Meeker, and Ellis, 1949), a scale which rates occupation, source of income, house type and dwelling area (see Appendix B). Because Warner's occupation ratings are dated, Hollingshead's Job Scale was substituted and weightings adjusted. Weighted totals of the four subscales comprised the SES score for each subject. The total scale had a range of 12-84.

All 20 of the vernacular speakers fell within the bottom quartile of the SES distribution, leading to the conclusion that, at least within this population, their dialect was socially constrained--that is, a sociolect (DeStefano, 1973). From this population, six males and females were drawn at random ($\underline{M}$ = 71.00; $\underline{SD}$ = 8.51). Middle class subjects were drawn from both, the same inner city school, and from a suburban school, (six males and six females from each) in order to contrast school and control for class differences.

Dugan (1977) found that first-grade boys differed significantly from first-grade girls both, in the amount, and kinds of information they incorporated into their retellings of stories. Sex also appears to be a factor in the number of vernacular black forms produced by a speaker (Wolfram, 1969), women using fewer Black English forms than their male, ghetto counterparts. To control for these expected differences, sex was incorporated into the design of the study as a blocking variable.

One of the most vexing problems in longitudinal research is, of course, subject mortality. To compensate for the possible loss of subjects from the group of 36, initially drawn at random from the total stratified subject pool, two additional subjects were drawn randomly from each level of the pool--as noted earlier, stratified by dialect/socio-economic class, sex and school--and assigned to each level of the design. Data were obtained on these 12 replacement subjects, all blind to their identity as replacements. Thus, eight subjects were assigned to each cell constituting the blocking variables in the study. Two subjects were lost from the lower class, female, vernacular-speaking, urban-school cell. Two also were lost from the middle class, female, nonvernacular-speaking, urban-school cell. To obtain equal numbers within each cell, two subjects were dropped at random from the remaining four cells in the design for a total of 36 subjects.

To determine the extent to which the assignment of replacement subjects to the design had affected the composition of these levels, scores for middle class subjects from the Index of Status Characteristics

were subjected to an analysis of variance having two between-subject comparisons--sex and school. The results of this analysis are presented in Table 1.

Table 1

ANOVA of Socio-Economic Class by School and Sex

Source	df	MS	F	p <
School (A)	1	222.04	5.39	.05
Sex (B)	1	35.04	.05	
School X Sex (A x B)	1	22.05	.54	
Error (W/Ss)	20	41.19		
Total	23	47.95		

As can be seen from Table 2, subjects from the suburban school scored significantly lower on the Index of Status Characteristics. As indicated by Table 1, there were no other significant effects.

Table 2

Means and Standard Deviations of Socio-Economic Class by School and Sex

Index of Status Characteristics	Urban School	Suburban School
Mean	38.33	32.25
Standard Deviation	7.47	4.41

Quite obviously, replacing subjects in the urban school population unbalanced the equality that had been established within the middle class population for the two schools. This finding of school differences, thus necessitated a design arrangement wherein the suburban population had to be treated as a distinct subgroup. Therefore, data from the suburban school were analyzed, both separately, and in a school replication arrangement for all MANOVAS, ANOVAS, and discriminant function analyses. These design arrangements are discussed in later sections of this chapter.

The import of this difference between the urban and suburban middle class populations must be kept in perspective. The Index of Status Characteristics, the socio-economic scale employed in this study, has a weighted score range of 12 to 84. Both means reported in Table 2 rest well below the midpoint of the scale (48), and clearly within the "middle class" spectrum on the scale. Whether or not treating class extremes such as "middle class" or "lower class" has any greater import for language variation than significant differences found to exist within these larger categories has not been established. But, there is no good reason for ignoring such "within-class" variations. Therefore, the finding that middle class children in the two schools differed significantly on the Index of Status Characteristics argued for the inclusion of a school replication study as a minimum and separate analyses for each school, as necessary, where differences in the replication study were obtained.

Data Collection Procedures

During the early weeks of the study, research associates worked in the classrooms with individuals and small groups of children. They read stories to them, invited children to retell the stories, or to tell others "they knew." The research associates also encouraged them to write, often providing materials in the form of colored paper, booklets, or flow pens. Children also were given the opportunity to dictate stories of their own composition, with the researcher acting as scribe. The oral story retellings, as well as the dictated stories, frequently were audiotape recorded to prepare the way for the recording to be done as a part of the later data collection. These activities were carried out in the regular classroom or other available vacant rooms in the schools. Prior to the actual data collection, all children had the opportunity to hear, tell, and dictate stories.

The language samples in the three modes were collected in March 1979, October 1979 and May 1980. Seven research associates participated in the data collection, but all had been working in the classrooms and were known to the children as visiting teachers. At least one associate worked regularly with each classroom and knew the children well. All researchers were trained in data collection procedures (see appendices C and D).

Story retelling data usually were collected in a single day at school, this was followed by the collection of dictation data, which required three or four days in each school. Every effort was made to fit the dictation and writing experiences into the ongoing life of the classroom. The writing was carried out in the classrooms, with the teachers discussing the assignment with their children.

Story Retelling

Three very different folktales were chosen for the retelling experience. The quality of the story, reasonable length for retelling, and children's lack of knowledge of the tale, were among the criteria that influenced selection (see page 35 for others).

In small groups of four to six, children were taken out of the classroom to a room in the school where the stimulus story could be read without interruption. One member of the research team served as story "reader" and the others as "listeners" for the retellings. The children were told they would be read a new story that the reader had enjoyed and wanted to share with them. The reader also told the children they would each have the opportunity to share the story with a visiting teacher when the reading was finished. The reader then read the story as it typically would be read in the classroom, providing enough time so that the pictures could be viewed. Upon completion of the story, the reader went through the book a second time, showing each page in turn, not commenting but accepting any spontaneous comments about the story from the children. If, at any time, a child indicated concern about being able to remember everything about the story, in retelling it to another, he was reassured that it was all right to retell only what he could remember.

Following the reading each child was taken to a "listener" member of the research team who was introduced as a teacher who did not know the story that had just been read. The number of listeners matched the number of children in each story reading group so that no child was made to wait, i.e., the time and activity between the end of the reading session and the retelling was uniform for each child. In introducing the listener, the reader explained to each child that the visiting teacher did not know the story that had just been read and stated that the teacher would like to hear it. The reader then left the room, the listener reaffirmed the task, explaining that the retelling would be tape recorded for the purpose of sharing it with other teachers who were interested in stories. Once the child began his retelling, the listener tried not to interrupt the child's narrative. The listener was attentive, but did not collaborate in the child's text production. The intent was to allow the child to construct his own text and to avoid additions by the listener to the content or structure of the narrative.

Dictated Story Data

Dictated stories were collected at the two schools during the two-week data collection period, exclusive of the two days devoted to story retelling. Expectations for dictating original stories to members of the research team had been established prior to the data collection; all children had previous experience in dictating stories to a researcher who acted as scribe while being tape recorded as an ongoing classroom activity. The child was told that his story was to be written for him,

that it could be as long (or as short) as he wanted, and that it could be about anything that interested him/her. Emphasis was placed on composing "your very own story," rather than retelling a well-known one (e.g., "The Three Little Pigs") or a recently-viewed TV cartoon.

The story was taken down in manuscript writing by the researcher. The child was aware that his words were being written and could see the actual writing if s/he wished. Children were given an unobstructed view of the scribe's activities and ample opportunity to observe the scribe take down their dictations.

Dictation proved to be a fairly popular activity in first grade, with most children requesting a turn with the scribe. Generally the order of data collection followed a volunteer pattern, with the scribes working with children who indicated their readiness with a story. At the time of collection each child went with a scribe to an available room in the school where a tape recorder had been set up. The dictation session was tape recorded, and the child was told that the purpose of the recording was to check on the accuracy of the scribe's copy before it was typed and placed in the classroom storybook. Once the child began dictating, the researcher attempted to keep up with the child's dictation pace, accepting any comments or instructions the child gave regarding the scribe's performance and/or the writing process, but was careful not to interrupt the child's narrative. In cases when a child dictated an obvious retelling of a known story or rhyme the scribe elicited a second dictated text after encouraging the child to tell his/her own story (see Dictation Procedures, Appendix D).

Story Writing Procedures

During the two-week observation period, an "assigned writing" sample was collected from each subject. Every effort was made to make this activity a natural part of the ongoing work of the classrooms. But in some situations, particularly in the early collections in grade one, the children were not accustomed to writing original stories. In fact, many did very little writing, and what was produced often was copied from charts or the chalkboard. In the beginning, it was therefore necessary to develop, with the teachers, conditions that would interest children and cause them to write a story within a period of one or two days. Emphasis was placed on writing stories. Thus, children were given colored paper or paper folded into booklets to further establish the story context. Teachers discussed the writing assignment with the children and tried to link it to work and experiences that children were currently involved in. Sometimes the discussion centered about stories, a wordless picture book, or a recent particular experience--a visit to a grocery store, or a performance by a mime. The contexts were varied, but a first priority of the investigations was to work within the curriculum and constraints of each classroom.

Sessions for assigned writing were not limited in time. Nevertheless, the children normally were to begin in early morning and continue for an hour or more, or until most children were finished. Anyone who had not finished and wished to do so, kept his story to work on through the afternoon and next day. The researcher, as well as the classroom teacher, was available in the initial writing session. The researcher then returned the next day to sit down with the authors and read through the stories. This last step was essential because children were encouraged to use their personal, creative, or invented spellings. Occasionally these renditions were beyond interpretation without the help of the author. The exact word intended was essential for the cohesion and story structure analysis, as well as for the spelling coding.

As soon as the writing was obtained, two copies were made and the original returned to the classroom, if so requested by the teacher. In most instances, however, the original script was retained.

Preparing the Oral and Written Texts for Coding

Preparation of the transcriptions of the audiotaped oral narratives produced in the two tasks (story retelling and story dictation) proceeded in two stages.

In the first stage, a complete transcription of each audiotaped data collection session was made. The stream of speech was initially segmented at the level of the orthographically realized word. Transcriptions were typed in traditional orthography with capitalization of proper nouns and the first-person singular pronoun. No punctuation was included in the typescripts. These original typescripts were unedited and included all verbalizations recorded during the sessions. Filled pauses, word and phrase repetitions, stutters, corrections and false starts were included, as were any verbal interactions between child and listener/scribe. Interjections by the adult were rare, but when they did occur, interjections typically consisted of indications of continued interest such as "hmm" or repetition of the child's most recent words following an extended pause. Unintelligible words or segments of text, which occurred very rarely, were noted in the following manner on the typescripts: (...), for what appeared to be a single word, and (... ...), for longer utterances. Lines of typed text were numbered sequentially and words spoken by the listener/scribe were identified with the letters: IN. (An example of an original typescript appears in Appendix F.)

Using both the prepared typescripts and the audiotapes, a research associate, working with a second researcher, edited the typescripts in preparation for coding. First, each child's narrative text was abstracted from the total language recorded during the taping sessions. There was no difficulty in determing text boundaries; the two editors agreed in all cases. Context supported by the children's use of

narrative conventions such as "once upon a time..." or "there was once..." and "they lived happily ever after," facilitated boundary decisions. Also of help in many language samples, was a shift into a "story voice" distinct from the conversational language intonation preceding and following the narrative text. Marked for exclusion from the analysis were non-silent phenomena such as filled pauses, unmotivated repetitions, and abandoned forms. These non-silent phenomena correspond to what have been called "mazes" (Loban, 1963), or "garbles" (Hunt, 1964), in descriptions of child language. Editors also marked listener/scribe interjections and child asides (examples of the latter: "I wanted 'landed'"; "did I say 'pigs'?"; "you like writing, don't you?") for exclusion from the narrative texts. Examples of verbalizations excluded from the narrative texts (marked by brackets and asterisks) are given below. The first example is from the retelling corpus and the second is from the dictation corpus.

[2.1] once there was an old woman and her little girl and they were really poor and they only had [a little] a tiny loaf of bread and then every day the little girl would go out [to find] to the woods to find some nuts and berries ...

[2.2] ... [um] the witch [um] went to feed the hogs then [um] the witch went to feed the chickens then the horses* did I say pigs did I say pigs*
IN:**you said hogs**
oh then pigs [she went to feed] she went to feed the pigs ...

Editing also involved identifying and marking the units upon which the subsequent cohesion and story structure analyses were to be based. While cohesion, Halliday and Hasan (1976) point out, is not limited to relations "above the sentence," the present study focused on the means whereby structurally unrelated units of language are linked together. Halliday and Hasan refer to this "intersentence cohesion" as "the variable aspect of cohesion" (1976, p. 9). The analysis of "non-structural" cohesion requires the identification of sentences or sentence-like units in the language to be analyzed. Linguists point out the difficulty of defining the "sentence" (Allerton, 1969; Crystal, 1976; Garvin, 1964). As Allerton notes, traditional definitions of the sentence are made in terms of the conventionalized written language, i.e., as a sequence of words lying between punctuation marks. Such traditional definitions were not useful for the oral language data of this study; therefore, an operational definition of a sentence-like unit that could deal with spoken English was selected: the "T-unit." As defined by Hunt (1964), the T-unit is a complex clause consisting of one independent or main clause with any dependent or subordinate clauses attached to it or embedded in it. The T-unit has been used in many studies of child language development--in both speech and writing--

because of its efficacy and reliability. This kind of reliability is particularly important to the present study of the cohesive relations between non-structurally related elements of children's oral narratives.

An additional editing procedure involved segmenting, or parsing, the texts into the T-units, upon which the cohesion analysis was based. Also at this point, selected symbols, found to be helpful during cohesion analysis in interpreting text and making coding decisions, were added to the typescripts. The full notational system used in editing the typescripts is presented in Figure 1. And an example of an edited original typescript appears in Appendix F. Following the editing procedure, typescripts were retyped, and coded identification number replaced all other identification on the protocols.

One copy of the children's writing was kept in its original state for analyses related to concept of message, spelling, and other writing conventions. The second copy of all those scripts judged to be a text were cast into T-units, edited, and transcribed (with all spellings correct), following the procedures used for the oral texts. Story structure and cohesion coding were done on the typed scripts that had been parsed into T-units.

Cohesion Coding and Analyses

Coding of the edited narrative texts followed the scheme set out in Cohesion in English (Halliday and Hasan, 1976). The five categories identified by Halliday and Hasan which represent types of cohesion (reference, substitution, ellipsis, conjunction, and lexical cohesion), provided the framework for coding. All instances of exophoric, as well as endophoric, presupposition, within these categories, were coded. While not contributing directly to the integration of a text (i.e., cohesion, as technically defined), exophora does contribute to the creation of text through linking language with features of the larger textual environment and, as such, bears on the question of interest in this study: what options do children use in creating their texts? All coding was done by two research associates and one principal investigator. A reliability check was run on a sample of ten randomly-selected texts, five representing each task. A research associate trained in cohesion analysis also coded the ten texts. The correlation coefficient calculated for the two coders was .96 (SPSS Subprogram Reliability).

As noted earlier, exophora is a type of phoricity which takes one outside the text. Exophoric items are presupposing textual elements, whose intended, more precise meanings, are mediated through extra-linguistic factors. While it is possible for the presupposition involved in reference, substitution, and ellipsis to be exophoric, occurrences in the latter two categories are fairly infrequent (Halliday and Hasan, 1976).

#	Used to mark the boundaries of each narrative text.
[ ]	Used to mark non-silent phenomena (filled pauses, unmotivated repetitions, abandoned forms, etc.) and, following Hunt, considered extraneous to the T-unit.
* . . . *	This mark identifies listener/scribe interjections or child asides not considered a part of the child's intended narrative text.
** . . . **	Used to mark any responses to interjections or asides not considered a part of the narrative text.
/	Slashes mark T-unit boundaries and are numbered sequentially.
? !	Question and exclamation marks were added to the typescript when the child's intonation warranted it and proved helpful in subsequent cohesion analysis (no other terminal punctuation was marked).
" . . . "	Quoted speech in the text for which a speaker is lexically identified.
((sp:name))"..."	Quoted speech in the text which is not lexically attributed to a speaker but which can be attributed to a speaker based on context or the child's use of a role voice.
((sp:?)) "..."	Quoted speech in the text which is ambiguous with respect to speaker.
<u>underlining</u>	Underlining is used to mark contrastive stress or other kinds of emphasis used by the child which could aid the cohesion coder in interpreting the text.

Figure 1: Notational System for Editing Oral Language Transcripts

A system for subcategorizing exophoric reference was adapted from Hasan's forthcoming work (in press) on semantic styles. The subcategorization is based on the type of situational knowledge required for interpretation of the exophoric item. Using the criteria and terminology proposed by Hasan, the following subcategories of exophoric reference were coded in the data of this study:

Formal Exphora--Those items which are only technically exophoric. One's knowledge of the language and a shared cultural context allow an adequate interpretation. Thus, upon hearing or reading the utterance, "On her way home from school the reluctant scholar dropped her books in the street," one does not feel compelled to identify what street. Specific identification of the entity marked by the definite article is, in this instance, irrelevant. "Generalized" exophoric reference ("You [i.e., one] shouldn't feed the animals at the zoo"), "institutionalized" exophora ("Jim went to see the police"), and "homophora" (reference to a whole class or to a unique member of a class, such as the stars, the moon) were included in this category.

Instantial Exophora--Those items whose presuppositions are mediated via some elements in the immediate situation: reference is being made to some aspect of the here-and-now. For example, if an author begins his story with, "I went to Mars on a spaceship and had a great adventure," full identification of the referent of the pronoun is situationally possible. Even if not present at the text's creation, a partial identification of "author" is possible and usually adequate. In the narrative texts of this study, instantial exophorics were limited to first- and second-person pronouns.

Restricted Exophora--Those items whose intended meanings go completely beyond the immediate situation and are available to the listener/reader only on the basis of shared knowledge mediated by past experience. Thus, in a story retelling that begins, "They didn't have any food--just this little piece of bread. She went out to look for nuts and berries," identification of "they" and "she" is not possible without recourse to knowledge that goes beyond this retelling situation and this text. (If the illustrated story on which the retelling is based were present during the retelling, and the pictures were pointed to, then these exophora would be considered instantial. The book, with its illustrations, was not available to the child during the retelling task in this study.)

The semantic constraints involved in telling a story to another who claims not to know the story, require that one talk in such a way that one's meanings are available to the listener. The use of formal exophora and certain instantial exophora (those representing speech roles in the

situation) in the tasks of this study, were seen as unambiguous in these contexts of narration. However, the use of restricted exophora relative to the characters and events in the stories, was seen as ambiguous. In this study, formal and instantial exophora, whose meanings were considered available to the listener, were included for purposes of data analysis in the category of endophoric reference. Restricted exophora formed a separate category for tabulating purposes. Thus frequencies within six categories of presuppositional "ties" were tabulated: reference, restricted exophoric reference, ellipsis, substitution, conjunction, and lexical cohesion. Appendix G contains an edited, retyped dictation text, along with a sample of the coding record for this text.

Analysis of the Cohesion Data

Differential use of cohesive ties in writing was compared in three separate MANOVAs where dialect, school, and sex served as the between-subjects factors and observation analyses, the within-subjects factor. MANOVA (Jones, 1966) was selected because it permits the testing of group differences in terms of multiple dependent variables considered simultaneously. MANOVA packages the dependent variables into a transformed composite variable, Y, which represents a linear combination of the response variables weighted to maximize a discriminant criterion. A significant MANOVA test statistic suggests rejection of the null hypothesis of no difference among group centroids. If overall differences among groups are found, follow-up techniques allow the assessment of the relative contribution of each of the dependent variables to those differences.

Three separate comparisons were made because, in each instance, there was no comparable population. In one comparison, the objective was to explore differences between schools; in another, differences between dialects within a single school; and in the third, differences between sex over observations. They are listed below:

MANOVA 1	School X Sex X Observation
MANOVA 2	Dialect X Sex X Observation
MANOVA 3	Sex X Observation

Figure 2. Cohesion Multivariate Analyses of Variance

Text length was free to vary in the narrative tasks of this study. To allow for differential text length, frequencies of ties within the six categories identified for coding were expressed as a proportion of total ties for each text. Following the coding, it was observed that reference, conjunction, and lexical cohesion were used extensively by all children in the tasks. Ellipsis and restricted exophoric reference were

used by most of the children. Moreover, use of these latter two categories of linguistic devices involved more than one instance in the great majority of cases, although their relative frequency of use did not approach the magnitude found for reference, conjunction, and lexical cohesion. Substitution, however, as a text forming device, was used by few children in the samples, and even fewer had more than one instance of substitution in their texts. Therefore, this category was eliminated from the multivariate analysis of variance, performed on the proportion scores of the remaining five categories. These categories were: exophoric restricted reference, ellipsis, conjunction and lexical cohesion.

Since proportion scores were to be used in the MANOVA, they were subjected to an arcsine transformation to conform to the assumptions of the multivariate normal distribution. The arcsine transformation results in a variable that is normally distributed with a constant variance. Computer program CANOVA, a component analysis of variance (Clyde Computing Services, 1973) was used for the MANOVA analysis. The test of significance employed was Wilks's likelihood ratio criterion, transformed into Rao's approximate F.

Story Structure Coding and Analyses

Texts may be thought of as having fixed and variable elements. The purpose of text analysis is to characterize these two properties. Propp (1968) attempted to specify the fixed properties of Russian fairy tales according to the functions of the dramatis personna, focusing upon what characters do rather than upon who carries out actions or upon how actions are accomplished. Functions abstractly represent actions. They are defined without reference to the character who performs them. A person who helps the hero satisfy a need can vary from tale to tale. The helper can be a witch, the hero's friend, or a stranger. The underlying action is the same. But since the action does take place within the overall set of actions that go to make up the tale, a given act can have different meanings. Someone who helps the hero obtain an agent necessary for satisfying a need renders a service far different from a person who helps lure the hero into a trap. Thus identical acts can represent quite different functions. And quite different acts may have the same meaning. For example, a warning to a child not to go into the forest differs significantly from one given to a combatant in the course of a conflict. A function is always defined relative to its significance for the course of the action.

Functions, therefore, serve as fixed elements in a tale. They are the basic constituents of the story. Propp identified 31 functions. Not all functions, however, must occur in a single tale. When functions do occur in a tale, they ordinarily do so in a particular order. Thus, order constitutes a second fixed element in a tale. Order grows out of the elemental logic of actions. Help cannot be given without some pre-existing need for it or without some circumstance

wherein the hero's plight is made obvious. Likewise, the transfer of money must be preceded by a clear need or a rendered service. Thus, order derives not from convention, but from the logic of events and actions. Tales with the same functions and orders are most likely representative of the same genre. But too much should not be made of order. Even in Propp's analysis of Russian tales, he was forced to posit the notion of transformations to account for tales whose functions appeared in a noncannonical order. If the order of functions follows logically from the nature of the actions, then it is not necessary to preserve cannonical order.

Subsidiary or minor tales may be embedded within, or follow upon, the major tale. Propp referred to these subsidiary tales as moves. The terminology is not critical. Thus, we too referred to all such subsidiary actions as moves. What is significant about them is that parallel, repeated, and sequential moves, complicate a tale, giving rise to the question of how such subsidiary moves are to be coded and scaled. Propp, of course, solved the problem by bracketing moves. He specified that two functions were the basis for assigning a bracket, i.e., villainy and lack. In addition, two pairings--struggle, coupled with victory, and a difficult task, coupled with its solution--constitute mutually exclusive elements, distinguishing villainy tales from seeker tales. A tale, conceivably, could contain both pairs, one pair, or neither pair. Their presence simply helps to distinguish between moves, but in no way should be considered obligatory. What is obligatory is villainy or lack.

Functions may have double meanings. For example, in Magic Porridge Pot, the mother lacks knowledge of the witch's interdiction, which, of course, she cannot help but violate. Both lack and violation of an interdiction were coded because both meanings were inherent in the action that ensued. A text also may be vague in terms of the actions of a character which, in turn, makes functions difficult to assign. For example, the text says: "Mother Goose was going out." But no further mention is made of her actions. Is this sufficient as a case of absention? Coding in these instances was governed by the principle of assigning functions on the basis of consequences. Did the tale proceed as if absention occurred? If so, then the meaning of the function was absention and so coded. If the tale continued with subsequent actions indicating Mother Goose did not go out, then absention was not coded. Questions of this sort were always resolved by defining the function according to its consequences.

Interjudge Reliabilities for Coding Proppian Functions

On separate occasions, the same pair of judges coded two sets of protocols from two different story retellings. Interjudge reliabilities were computed for each set of 20 protocols (.85, .89). Dictation protocols (36) were coded by a different pair of judges, who achieved a slightly higher level of reliability than the first pair (.93). Overall, however, reliabilities were sufficiently high to warrant confidence in function definitions and coding procedures (see Appendix H).

Genre Classification

After judges had been trained and interjudge reliabilities had been extablished, each protocol then was classified as to its genre of discourse. For, even though task instructions to the children had specified that they tell or write stories, many children produced other genres of text. Protocols, thus, were classified as follows:

1. No Text--No utterance produced by the child.

2. Statement/Label--A single word or phrase defining or describing something in the immediate environment. For example, "It was a duck," or "Desk."

3. Composition--A present tense depiction of a child'e current experience. Compositions are closely identified with the circumstances, in and for which, they are produced, i.e., completing a writing assignment for the teacher. To illustrate: "My mom is nice. I go to school. My mom loves me."

4. Interaction--A text with many elements of a dialogue having an implied listener with whom an experience is being shared. For example: "First, you draw a circle. Then you draw a line. Then you make another line here."

5. Chronicle--Narrative that parallels real events in a child's life, yet expressed in a story frame with conventions such as, "Once a little girl and boy went to Disneyland." Characters and actions that parallel non-fictive experience and thematic unity, characterize these texts.

6. Tale--Narrative that sets forth events and circumstances that may reflect real life but without essential dependence on historical fact. They have thematic unity, conventional story markers, and fantastic characters, as well as fantastic events. They are fictive in nature.

Following genre classification, chronicles and tales were coded and scored for Proppian functions by five judges blind to subject identity but aware of context variations. There was no way to conceal these differences entirely, because retellings, of course, were about the same well known stories. Only retellings and dictations were compared. Despite instructions to the contrary, many children failed to produce chronicles and tales in the writing context, thus precluding comparisons with a measure that presumed a story genre. As reported above, interjudge reliabilities were moderately high. Still, occasional coding problems and questions arose. Two judges resolved such questions and assigned a function as agreed. It should be noted that in scoring the retellings, no attempt was made to assess recall. Only the functions

found in the children's texts were scored, regardless of whether or not a counterpart for a given function could be found in the tale the children had heard. The present study sought only to compare "packaging" and production of functions. Studies of the role of memory and comprehension in production are under consideration for later analyses, and one completed study will be presented in Chapter 6.

Selecting Stories for Retellings

In selecting stories for retelling, a main concern was to find stories that were not known to our subjects, but would likely interest them. Our subjects varied greatly in their experiences with traditional literature. They ranged from one group, that seemed to have some acquaintence with almost all stories considered, to another whose backgrounds were meagre. Selecting stories became more of a problem than originally anticipated.

At the onset of the project, most Russian fairy tales were too long and complex for some of our subjects. We looked for well-formed and artfully illustrated folktales, especially for recently published ones or new versions of old tales. To heighten interest, we chose to use picture books, but this decision constrained our choice of stories.

Three very different stories were eventually selected for story retelling--a modern fable, a folktale, and a Russian fairy tale.

Squawk to the Moon, Little Goose, by Edna Mitchell Preston, illustrated by Barbara Cooney (Viking, 1974).

Magic Porridge Pot, by Paul Galdone (The Seabury Press, 1976).

Salt, by Harve Zemach, illustrated by Margo Zemach (Holt, Rinehart and Winston, 1967).

Squawk to the Moon, Little Goose is a story of lack that has, embedded within it, three brief tales of villainy which provide the trebbling element found in many folktales. The story also contains folktale features of trickery, and also refrain, as with Little Goose's, "Good's good and bad's bad."

In Proppian analysis, the tale had two moves.

a (beginning situation)
2 (interdiction) coupled with 1 (absentation)
8a (lack: maturity and insight) and 3 (violation of interdiction)
...
6 (trickery) coupled with 7 (complicity)
8b (villainy)
10 (counteraction)
11 (departure)
12 (preparation)

13 (reaction)
15 (translocation)
8b (villainy)
9 (mediation)
10 (counteraction) coupled with 14 (receipt)
18 (victory) coupled with 19 (liquidation)
...
20 (return)
30 (punishment)
31 (equilibrium)

Magic Porridge Pot is one version of the magic pot tales that exist in several different cultures. It is especially appealing to children because it is the mother sho uses the magic pot without permission and as a result creates a huge problem which the daughter solves.

Actually, Magic Porridge Pot is two tales, conjoined by an interdiction given in the first, and violation of the interdiction, in the second. In Propp's terms, it is a tale with two moves:

a (beginning situation)
8 (lack) joined with 11 (departure)
9 (mediation)
12 (function of donor) and 2 (interdiction)
14 (receipt of magic agent) and 15 (transference)
19 (lack liquidated) and 31 (equilibrium)

The final state of happiness in the first tale provides the beginning for the second.

1 (absention)
8a (lack) and 3 (violation of interdiction)
20 (return)
19 (lack liquidated)
31 (equilibrium)

Salt is a story of the younger brother, "the fool," succeeding in making his fortune while his two older brothers turn to villainy and fail. It is a tale of lack--lack of status, success--in which a tale of villainy is embedded. The villainy tale is interrupted by a giant's story, a tale of interdiction and lack.

a (beginning situation)
8a (lack), 11 (departure) and 12 (donor)
14 (magic agent) 15 (transference)
25 (difficult task) and 26 (solution of task)
30 (reward to hero) and 31 (promise of marriage)

a (beginning situation) and 11 (departure)
5 (delivery of victim to villain) 8 (villainy)
...

a (beginning, giant's tale)
8 (lack of transport, giant's lack of happiness)
2 (interdiction) 15 (transference)
20 (return home)
...

27 (recognition of hero)
28 (exposure of false hero)
30 (villainy punished) 31 (wedding)
...

3 (interdiction violated)
25 (difficult task)
26 (solution)
31 (equilibrium)

These stories were analyzed to determine their comparability in terms of Propp's functions. The criteria on which they were compared were: (a) total number of functions in a story, (b) the number of different types of functions in a story, and (c) the number of moves in a story. As noted earlier, a given function may occur in a story more than once, either through trebbling, or additional moves, roughly reflecting the tale's length. On the other hand, the number of different types of functions suggests something of the tale's richness while number of moves may indicate complexity. As can be seen from Table 3, Salt and Squawk to the Moon, Little Goose are equally rich, though Salt is shorter and somewhat more complex. They differ considerably, however, from Magic Porridge Pot, a fairly straightforward and brief story with a slight ironic twist in the second move. Both Salt and Squawk to the Moon, Little Goose contain parallel action and multiple embedding. While Squawk to the Moon, Little Goose embodies the simple, but clear, moral ambiance of a fable for children, Salt has all the atmospherics of a true Russian fairy tale. Thus, each story constituted a rather different experience for each retelling.

Table 3

Number of Functions, Types, and Moves in Three Stories

Stories	Functions	Types	Moves
Squawk to the Moon, Little Goose	29	18	2
Magic Porridge Pot	15	12	2
Salt	22	18	3

Analysis of Story Structure Data

Both multivariate and univariate analyses of variance were employed for story structure comparisons. For the multivariate analyses, as with cohesion, computer program CANOVA (Clyde Computing Services, 1973) was used. This program tests for significant differences with Wilks's liklihood ratio transformed to Rao's approximate F. Significant multivariate differences were followed-up with univariate analyses of variance.

Number of functions, function types, and moves, served as dependent variables in six complementary multivariate analyses of variance performed on the story structure data. In the first of these analyses, 144 scores for each dependent variable were organized into a mixed design, where sex (six males and six females) and dialect (six vernacular and six nonvernacular) served as between-subjects comparisons, and where modes of discourse (retelling and dictation) and observation periods (Spring 1979, Autumn 1979, Spring 1980) constituted the within-subjects comparisons. This study was designed to compare factors within the urban school setting. Similar design arrangements were employed in a second analysis whose purpose was to compare the urban with the suburban school controlling for dialect. While only middle class children from the two schools were compared, the two populations did differ on the index of status characteristics with t (24 df) = 2,79 ($p < .01$). Children from the suburban school averaged from middle to upper-middle class on the "index" (M = 33.33; SD = 4.37). While those from the urban school, averaged somewhat higher scores on the scale (M = 38.33; SD = 7.79). The two populations had been equated on the scale at the outset of the study, but because of subject mortality and replacement, this initial equality was lost necessitating a school comparison. For this comparison, dependent variables were organized into a 2 x 2 x 2 x 3 mixed design where sex and school were the between-subjects factors and where modes and observations were the within-subjects factors. A third multivariate analysis of variance then was employed to examine only the suburban school. As before, number of functions, function types, and moves, were organized into a mixed design with one between-subjects comparison--sex (six males and six females)--and two within-subjects comparisons--modes and observations.

Three additional multivariate analyses of variance focused upon dictation. Retelling was removed as a comparison in order to obtain a clearer view of dictation over the three observation periods--retelling differences having potentially spurious origins in the variance associated with apriori story differences. In all other respects, design goals and arrangements were identical to those reported above.

Significant MANOVA test statistics were followed up by univariate analyses of variance. These designs compared the same variables, organized in the same ways reported above, for the multivariate analyses. Significant univariate F ratios were subjected to Geisser-Greenhouse

conservative F corrections for repeated-measures designs. Post hoc comparisons were made using Tukey's H.S.D. procedure.

Procedures for Coding Concept of Message

Two additional univariate analyses of variance were performed on functions and function types from texts produced by a sample of subjects who were able to compose unequivocal fictional narratives. Just 14 subjects were able to do so by mid-first grade. This number rose to 27 at the end of grade two. The point of these two analyses was to obtain developmental data controlled rigorously for genre. Other genres of text were excluded from these analyses to eliminate genre as a contaminating source of variance.

During the early stages of becoming literate, young children begin to gain control over basic concepts about the organization of surface features of written language. They learn the specifics of how texts convey information, e.g., that the groups of letters, not the pictures, carry the message, or that particular patterns of letters correspond to particular spoken words (Clay, 1975; Henderson, 1980). Simultaneously, they also internalize and use the rules governing direct physical aspects of text, e.g., conventions of spacing and directionality. As part of this study, samples of children's writings were examined to see how children differed in their understanding and use of these principles.

Sets of exhaustive, mutually exclusive categories, were developed for each of the three dimensions of Concept of Message, Directionality, and Spacing. (These will be described in greater detail in the section, Results and Discussion: Conventions of Print.) Based on their writing samples, each subject was classified as being in one category, for each dimension, for each of the five observations. Because of the explicit nature of the categories (e.g., percent of word boundaries observed, string of random letters), a single investigation--working with the writing samples and data collectors' written comments--classified the data. No assumptions have been made about the linear or progressive nature of the categories. It was expected however, that, in a general way, subjects would be classified in the higher number categories as they gained more control over the conventions. The number and percentage of children per category was tabulated by sex, dialect, school, and observation. These data will be reported in Chapter 3.

APPENDIX B

Cohesion MANOVAs by Mode and Grade
for Urban and Suburban Schools

APPENDIX B

Cohesion MANOVAs by Mode and Grade for Urban and Suburban Schools

The tables which follow are included in this report for the reader who may wish to examine the bases for decisions to analyze dictation, writing, and grade level data in separate multivariate analyses. These tables show significant, multivariate, urban-school effects for grade, dialect, mode and observation; significant second-order interactions for grade by sex by observation, grade by mode by observation, and sex by mode by observation; and significant first-order interactions for sex by mode, sex by observation and mode by observation.

Tables containing relevant means and standard deviations also are included in Appendix B.

Table B.1

Cohesion MANOVA by Grade, Dialect, Sex, Mode, and Observation in Dictation and Writing at Urban School (K-1/1-2)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	39				
Grade (A)	1	5.00	28.00	4.14	.006
Dialect (B)	1	5.00	28.00	3.01	.03
Sex (C)	1	5.00	28.00	.55	.74
Grade by Dialect (AB)	1	5.00	28.00	2.29	.07
Grade by Sex (AC)	1	5.00	28.00	3.90	.008
Dialect by Sex (BC)	1	5.00	28.00	1.11	.38
Grade X Dialect X Sex (ABC)	1	5.00	28.00	.70	.63
S/ABC	32				
Within Subjects	200				
Mode (D)	1	5.00	28.00	27.75	.001
Grade X Mode (AD)	1	5.00	28.00	2.86	.03
Dialect X Mode (BD)	1	5.00	28.00	2.79	.04
Sex X Mode (CD)	1	5.00	28.00	1.30	.29
Grade X Dialect X Mode (ABD)	1	5.00	28.00	4.02	.007
Grade X Sex X Mode (ACD)	1	5.00	28.00	.30	.91
Dialect X Sex X Mode (BCD)	1	5.00	28.00	.77	.58
Grade X Dialect X Sex X Mode (ABCD)	1	5.00	28.00	1.16	.36
SD/ABC	32				
Observation (E)	2	10.00	120.00	7.14	.001
		4.00	60.50	4.12	.005
Grade X Observation (AE)	2	10.00	120.00	2.10	.03
		4.00	60.50	.96	.44
Dialect X Observation (BE)	2	10.00	120.00	.60	.81
		4.00	60.50	.24	.91
Sex X Observation (CE)	2	10.00	120.00	1.55	.13
		4.00	60.50	1.57	.20
Grade X Dialect X Observation (ABE)	2	10.00	120.00	1.04	.41
		4.00	60.50	.43	.79

Cohesion MANOVA at Urban School (Cont.)

Source	df	dfHYP	dfERR	F	p. <
Grade X Sex X Observation (ACE)	2	10.00	120.00	.84	.59
		4.00	60.50	.40	.81
Dialect X Sex X Observation (BCE)	2	10.00	120.00	1.46	.18
		4.00	60.50	.83	.51
Grade X Dialect X Sex X Observation (ABCE)	2	10.00	120.00	.13	.99
		4.00	60.50	.05	.99
SE/ABC	64				
Mode X Observation (DE)	2	10.00	120.00	4.05	.001
		4.00	60.50	2.30	.07
Grade X Mode X Observation (ADE)	2	10.00	120.00	1.46	.16
		4.00	60.50	.40	.81
Dialect X Mode X Observation (BDE)	2	10.00	120.00	.55	.85
		4.00	60.50	.08	.99
Sex X Mode X Observation (CDE)	2	10.00	120.00	.72	.70
		4.00	60.50	.43	.79
Grade X Dialect X Mode X Observation (ABDE)	2	10.00	120.00	.81	.60
		4.00	60.50	.40	.81
Grade X Sex X Mode X Observation (ACDE)	2	10.00	120.00	.47	.90
		4.00	60.50	.28	.89
Dialect X Sex X Mode X Observation (BCDE)	2	10.00	120.00	.83	.61
		4.00	60.50	.40	.81
Grade X Dialect X Sex X Mode X Observation (ABCDE)	2	10.00	120.00	.50	.89
		4.00	60.50	.39	.82
SDE/ABC	64				
TOTAL	239				

Table B.2

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2) -- by Grade, Dialect, and Mode

Grade	Dialect	Mode	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
			M	SD	M	SD	M	SD	M	SD	M	SD
K-1			.06	.18	.38	.30	.01	.02	.10	.11	.29	.23
	Vernacular		.08	.24	.38	.36	.01	.02	.10	.11	.25	.23
		Dictation	.05	.05	.42	.12	.01	.02	.18	.08	.37	.20
		Writing	.11	.33	.34	.50	.00	.01	.02	.06	.12	.20
	Nonvernacular		.05	.09	.38	.22	.01	.03	.10	.12	.33	.21
		Dictation	.05	.10	.42	.15	.02	.03	.16	.12	.38	.13
		Writing	.04	.09	.34	.27	.01	.02	.05	.09	.27	.26
1-2			.08	.26	.36	.20	.02	.04	.15	.11	.32	.17
	Vernacular		.10	.24	.33	.22	.01	.03	.13	.13	.31	.19
		Dictation	.05	.08	.42	.16	.02	.04	.19	.10	.34	.09
		Writing	.15	.32	.23	.23	.01	.01	.07	.12	.28	.25
	Nonvernacular		.06	.21	.40	.18	.03	.06	.17	.09	.32	.15
		Dictation	.02	.02	.40	.07	.02	.02	.21	.05	.38	.08
		Writing	.10	.30	.41	.25	.04	.07	.13	.10	.27	.18
Dialect Means:		Vernacular	.09	.24	.35	.30	.01	.02	.11	.12	.28	.22
		Nonvernacular	.05	.17	.39	.20	.02	.04	.14	.11	.32	.18
Mode Means:		Dictation	.04	.07	.41	.13	.02	.03	.18	.09	.37	.13
		Writing	.10	.28	.33	.33	.01	.04	.07	.10	.24	.23

Table B.3

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables)
in Dictation and Writing for Urban School (K-1/1-2) -- by Grade and Observation

Grade	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
K-1	1	.09	.13	.32	.26	.01	.03	.08	.10	.20	.18
	2	.02	.03	.38	.30	.02	.02	.14	.14	.24	.19
	3	.08	.28	.44	.33	.00	.01	.09	.09	.42	.25
1-2	1	.18	.36	.30	.21	.01	.05	.12	.10	.27	.19
	2	.02	.04	.40	.22	.03	.04	.15	.11	.31	.18
	3	.03	.08	.41	.17	.02	.05	.18	.11	.37	.13
Observation Means:	1	.13	.28	.31	.24	.01	.04	.10	.10	.24	.19
	2	.02	.04	.39	.26	.02	.03	.14	.12	.28	.18
	3	.06	.20	.42	.26	.01	.04	.14	.11	.39	.20

Table B.4

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2) -- by Grade and Mode

Grade	Mode	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
K-1		.06	.18	.38	.30	.01	.02	.10	.11	.29	.23
	Dictation	.05	.08	.42	.13	.02	.03	.17	.10	.38	.17
	Writing	.07	.24	.34	.40	.01	.02	.03	.08	.20	.24
1-2		.08	.23	.36	.20	.02	.04	.15	.11	.32	.17
	Dictation	.04	.06	.41	.12	.02	.03	.20	.08	.36	.09
	Writing	.12	.31	.32	.26	.02	.06	.10	.11	.27	.22
Grade Means:	K-1	.06	.18	.38	.30	.01	.02	.10	.11	.29	.23
	1-2	.08	.26	.36	.20	.02	.04	.15	.11	.32	.17

Table B.5

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2) -- by Dialect and Mode

Dialect	Mode	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
Vernacular	Dictation	.05	.06	.42	.14	.02	.03	.18	.09	.36	.15
	Writing	.13	.32	.29	.39	.00	.01	.04	.10	.20	.24
Nonvernacular											
	Dictation	.04	.07	.41	.11	.02	.03	.18	.09	.38	.11
	Writing	.07	.22	.37	.26	.03	.06	.09	.11	.27	.22

Table B.6

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2) -- by Grade and Sex

Grade	Sex	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
K-1											
	Males	.06	.14	.35	.28	.01	.03	.10	.12	.31	.25
	Females	.07	.21	.41	.31	.01	.02	.10	.11	.26	.19
1-2											
	Males	.10	.30	.36	.22	.01	.04	.17	.12	.29	.17
	Females	.05	.12	.37	.19	.03	.05	.13	.11	.35	.17

Table B.7

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) for Urban School (K-1/1-2) -- by Mode and Observation

Mode	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
Dictation											
	1	.08	.10	.39	.12	.01	.03	.17	.08	.36	.10
	2	.03	.03	.43	.12	.03	.03	.21	.11	.33	.07
	3	.02	.03	.42	.15	.01	.02	.17	.08	.42	.19
Writing											
	1	.19	.37	.24	.29	.01	.05	.02	.06	.11	.17
	2	.01	.04	.34	.35	.01	.03	.08	.10	.23	.24
	3	.09	.28	.41	.34	.02	.05	.10	.12	.37	.21

Table B.8

Cohesion MANOVA by Grade, Sex, Mode, and Observation in Dictation and Writing at Suburban School (K-1/1-2)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	23				
Grade (A)	1	5.00	16.00	2.53	.07
Sex (B)	1	5.00	16.00	2.53	.07
Grade X Sex (AB)	1	5.00	16.00	1.20	.13
S/AB	20				
Within Subjects	120				
Mode (C)	1	5.00	16.00	5.77	.003
Grade X Mode (AC)	1	5.00	16.00	1.76	.18
Sex X Mode (BC)	1	5.00	16.00	3.20	.03
Grade X Sex X Mode (ABC)	1	5.00	16.00	1.38	.28
SC/AB	20				
Observation (D)	2	10.00	72.00	4.28	.001
		4.00	36.50	1.56	.21
Grade X Observation (AD)	2	10.00	72.00	3.04	.003
		4.00	36.50	.90	.47
Sex X Observation (BD)	2	10.00	72.00	2.14	.03
		4.00	36.50	.55	.70
Grade X Sex X Observation (ABD)	2	10.00	72.00	2.01	.04
		4.00	36.50	.98	.43
SD/AB	40				
Mode X Observation (CD)	2	10.00	72.00	3.38	.001
		4.00	36.50	.81	.53
Grade X Mode X Observation (ACD)	2	10.00	72.00	2.56	.01
		4.00	36.50	.48	.75
Sex X Mode X Observation (BCD)	2	10.00	72.00	2.38	.02
		4.00	36.50	1.04	.40
Grade X Sex X Mode X Observation (ABCD)	2	10.00	72.00	1.61	.12
		4.00	36.50	.97	.44
SCD/AB	40				
TOTAL	143				

200

Table B.9

Means and Standard Deviations of Cohesion MANOVA (Transformed Variables) in Dictation and Writing for Suburban School -- by Grade and Observation

Grade	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		M	SD	M	SD	M	SD	M	SD	M	SD
K-1	1	.03	.07	.46	.34	.01	.02	.12	.10	.26	.19
	2	.04	.15	.41	.20	.08	.32	.15	.13	.38	.16
	3	.00	.01	.47	.14	.03	.06	.15	.09	.38	.12
1-2	1	.03	.07	.52	.27	.01	.01	.14	.11	.37	.18
	2	.02	.03	.40	.10	.02	.03	.21	.08	.37	.10
	3	.01	.01	.38	.08	.01	.02	.17	.07	.45	.10
Grade Means:											
	K-1	.02	.09	.45	.24	.04	.19	.14	.11	.34	.17
	1-2	.02	.05	.44	.18	.01	.02	.17	.09	.39	.14
Observation Means:											
	1	.03	.07	.49	.31	.01	.02	.13	.10	.32	.19
	2	.03	.11	.41	.16	.05	.23	.18	.11	.37	.13
	3	.00	.01	.43	.43	.02	.04	.16	.08	.41	.11

Table B.10

Means and Standard Deviations for Cohesion MANOVA (Transformed Variables) in Dictation and Writing for Suburban School -- by Grade, Sex, and Observation

Grade	Sex	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
			M	SD	M	SD	M	SD	M	SD	M	SD
K-1	Males	1	.04	.10	.60	.37	.01	.03	.13	.08	.29	.21
		2	.01	.02	.36	.19	.15	.45	.14	.12	.41	.17
		3	.00	.00	.47	.13	.02	.04	.17	.09	.37	.11
	Females	1	.01	.03	.32	.26	.00	.01	.11	.11	.23	.18
		2	.06	.21	.46	.20	.01	.01	.16	.14	.35	.15
		3	.00	.01	.47	.15	.03	.08	.14	.10	.38	.13
1-2	Males	1	.05	.10	.58	.36	.00	.01	.15	.12	.36	.22
		2	.02	.03	.42	.09	.01	.02	.24	.07	.33	.09
		3	.01	.01	.37	.09	.01	.01	.21	.07	.43	.09
	Females	1	.01	.02	.46	.13	.01	.02	.13	.10	.43	.09
		2	.01	.02	.38	.11	.04	.03	.18	.09	.41	.11
		3	.01	.01	.39	.06	.02	.02	.14	.05	.46	.12
Observation Means:		1	.03	.07	.49	.31	.01	.02	.13	.10	.32	.19
		2	.03	.11	.41	.16	.05	.23	.18	.11	.37	.13
		3	.00	.01	.43	.12	.02	.04	.16	.08	.41	.11

APPENDIX C

Cohesion MANOVAs for School, Mode and Observation (K-1)

APPENDIX C

Cohesion MANOVAs for School, Mode and Observation (K-1)

The decision to analyze kindergarten cohesion data by individual schools was based upon a series of school comparisons. In these multivariate analyses of variance and companion discriminant-univariate follow-ups, cohesion data were organized into a design where school and sex were treated as between-subjects factors and mode and observation were treated as within-subjects factors. As shown in Table C.1, significant MANOVA test statistics were indicated for the school factor and two school-related, first-order interactions: school by observation and school by mode. Follow-up multivariate analyses for both dictation and writing produced no significant effect for dictation (See Table C.2) but a significant second-order interaction in writing for school by sex by observation (See Table C.3). Univariate analyses of variance indicated a significant second-order interaction for reference: F (2, 32) = 5.68, $p < .008$. This interaction is graphed in Figure C.1. Tukey post hoc tests indicated that suburban boys employed higher proportions of reference ties at observation one than suburban girls, urban girls, or urban boys. First-order, school by observation and sex by observation interactions were not significant.

The significant multivariate test statistic for the observation factor in writing (See Table C.4) was followed-up by the usual discriminant and univariate analyses (See Table C.5). Discriminant analysis indicated that lexical cohesion made the largest contribution to the

function followed by reference and ellipsis--the latter two, failing to achieve significance on univariate tests, probably contributing to the discrimination through their contrasting relative stability. Restricted exophoric reference, conjunction, and lexical cohesion did achieve designated univariate alpha levels (See Table C.5) for the observation factor. Exophoric reference proportions decreased significantly over observations--the sharpest drop at observation two, the beginning of second grade. Conversely, conjunction proportions increased at the beginning of second grade, then dropped slightly. Lexical cohesion proportions increased uniformly over observations--the significant difference shown between grade one and the end of grade two. Means and standard deviation for the observation factor in writing are displayed in Table C.6.

The cohesion MANOVA for the urban school population produced significant multivariate test statistics for the mode and observation factors (both roots) and for the first-order mode by observation interaction. Therefore, separate follow-up MANOVAs were performed for each mode, that is, dictation and writing (See Table C.7).

The MANOVA for dictation at the urban school indicated a significant multivariate test statistic for both roots of the observation factor (See Table C.8), and no first- or second-order interaction effects. Univariate and discriminant follow-ups (See Table C.9) indicated that lexical cohesion and reference contributed strongly to the function through the first root, and all variables except ellipsis contributed strongly to the function through the second root. Reference was the only univariate variable not to achieve significance for the observation factor in dictation.

Means and standard deviations, given in Table C.10, indicate a significant decrease in exophoric reference proportions at observation two and a significant decrease in ellipsis at observation three. Conjunction proportions decreased at observation three while lexical cohesion proportions increased significantly at observation three.

The urban school MANOVA for writing produced a significant multivariate test statistic for the dialect and observation factors (See Table C.11). The usual follow-up procedures indicated lexical cohesion and reference proportions, in that order, made the strongest contribution to the discrimination for the dialect factor; however, only lexical cohesion reached a significant univariate alpha criterion (See Table C.12). Tukey post hoc comparisons of mean differences for kindergarten lexical cohesion proportions (See Table C.14 for means and standard deviations) indicated that nonvernacular subjects used higher proportions of lexical cohesion in their texts than vernacular subjects. For the observation factor, lexical cohesion and conjunction proportions achieved significant, univariate, alpha levels (See Table C.13)--increases in lexical proportions having occurred at observation three; and significant increases in conjunction proportions having occurred at observation two, persisting through observation three (See Table C.10).

Similarly, suburban-school cohesion data for dictation and writing were first compared in a multivariate design (MANOVA) where sex was the between-subjects factor and where mode and observation were within-subjects factors. Significant MANOVA test statistics were obtained for the mode and observation factor as well as the first-order mode by observation interaction (See Table C.15). Significant mode and mode by observation effects led to the decision to analyze dictation and writing in separate

MANOVAs. The MANOVA for dictation data produced no significant main or interaction effects (See Table C.16) for kindergarten cohesion proportions at the suburban school. However, the suburban-school cohesion MANOVA for writing produced a significant test statistic for the observation factor (See Table C.17). Discriminant and univariate follow-up analyses indicated that lexical cohesion proportions made the largest contribution to the discrimination, followed by ellipsis, exophoric reference and conjunction (See Table C.18). Only lexical cohesion and conjunction, however, were implicated in the univariate analyses of variance. Mean differences (See Table C.19) demonstrated conjunction proportions increased significantly at observation two and continued to climb gradually at observation three. The same pattern was indicated for lexical cohesion proportions. Tukey post hoc comparisons indicated that lexical cohesion proportions increased significantly at observation two followed by a smaller increase at observation three—both, however, significantly higher than observation one.

Table C.1

Cohesion MANOVA in Dictation and Writing by School, Sex, Mode, and Observation -- (K-1)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	19				
School (A)	1	5.00	12.00	5.82	.006
Sex (B)	1	5.00	12.00	1.37	.30
School X Sex (AB)	1	5.00	12.00	.73	.62
S/AB	16				
Within Subjects	100				
Mode (C)	1	5.00	12.00	13.05	.001
School X Mode (AC)	1	5.00	12.00	3.39	.04
Sex X Mode (BC)	1	5.00	12.00	.79	.58
School X Sex X Mode (ABC)	1	5.00	12.00	.29	.91
SC/AB	16				
Observation (D)	2	10.00	56.00	4.81	.001
		4.00	28.50	2.09	.11
School X Observation (AD)	2	10.00	56.00	2.14	.04
		4.00	28.50	.90	.48
Sex X Observation (BD)	2	10.00	56.00	1.09	.39
		4.00	28.50	.68	.61
School X Sex X Observation (ABD)	2	10.00	56.00	.70	.72
		4.00	28.50	.62	.65
SD/AB	32				
Mode X Observation (CD)	2	10.00	56.00	3.02	.004
		4.00	28.50	1.42	.25
School X Mode X Observation (ACD)	2	10.00	56.00	1.31	.25
		4.00	28.50	.63	.65
Sex X Mode X Observation (BCD)	2	10.00	56.00	1.00	.45
		4.00	28.50	.51	.73
School X Sex X Mode X Observation (ABCD)	2	10.00	56.00	.50	.88
		4.00	28.50	.33	.86
SCD/AB	32				
TOTAL	119				

Table C.2

Cohesion MANOVA in Dictation by School, Sex, and Observation -- (K-1)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	19				
School (A)	1	5.00	12.00	2.16	.13
Sex (B)	1	5.00	12.00	1.18	.37
School X Sex (AB)	1	5.00	12.00	.51	.76
S/AB	16				
Within Subjects	40				
Observation (C)	2	10.00	56.00	1.70	.11
		4.00	28.50	1.74	.17
School X Observation (AC)	2	10.00	56.00	1.89	.07
		4.00	28.50	1.31	.29
Sex X Observation (BC)	2	10.00	56.00	.34	.97
		4.00	28.50	.20	.94
School X Sex X Observation (ABC)	2	10.00	56.00	.72	.70
		4.00	28.50	.53	.72
SC/AB	32				
TOTAL	59				

Table C.3

Cohesion MANOVA in Writing by School, Sex, and Observation -- (K-1)

Source	df	dfHYP	dfEPR	F	p. <
Between Subjects	19				
School (A)	1	5.00	12.00	1.99	.15
Sex (B)	1	5.00	12.00	.31	.90
School X Sex (AB)	1	5.00	12.00	1.05	.43
S/AB	16				
Within Subjects	40				
Observation (C)	2	10.00	56.00	4.18	.001
		4.00	28.50	1.08	.38
School X Observation (AC)	2	10.00	56.00	1.53	.15
		4.00	28.50	.57	.68
Sex X Observation (BC)	2	10.00	56.00	.89	.55
		4.00	28.50	.53	.71
School X Sex X Observation (ABC)	2	10.00	56.00	2.72	.008
		4.00	28.50	1.89	.14
SC/AB	32				
TOTAL	59				

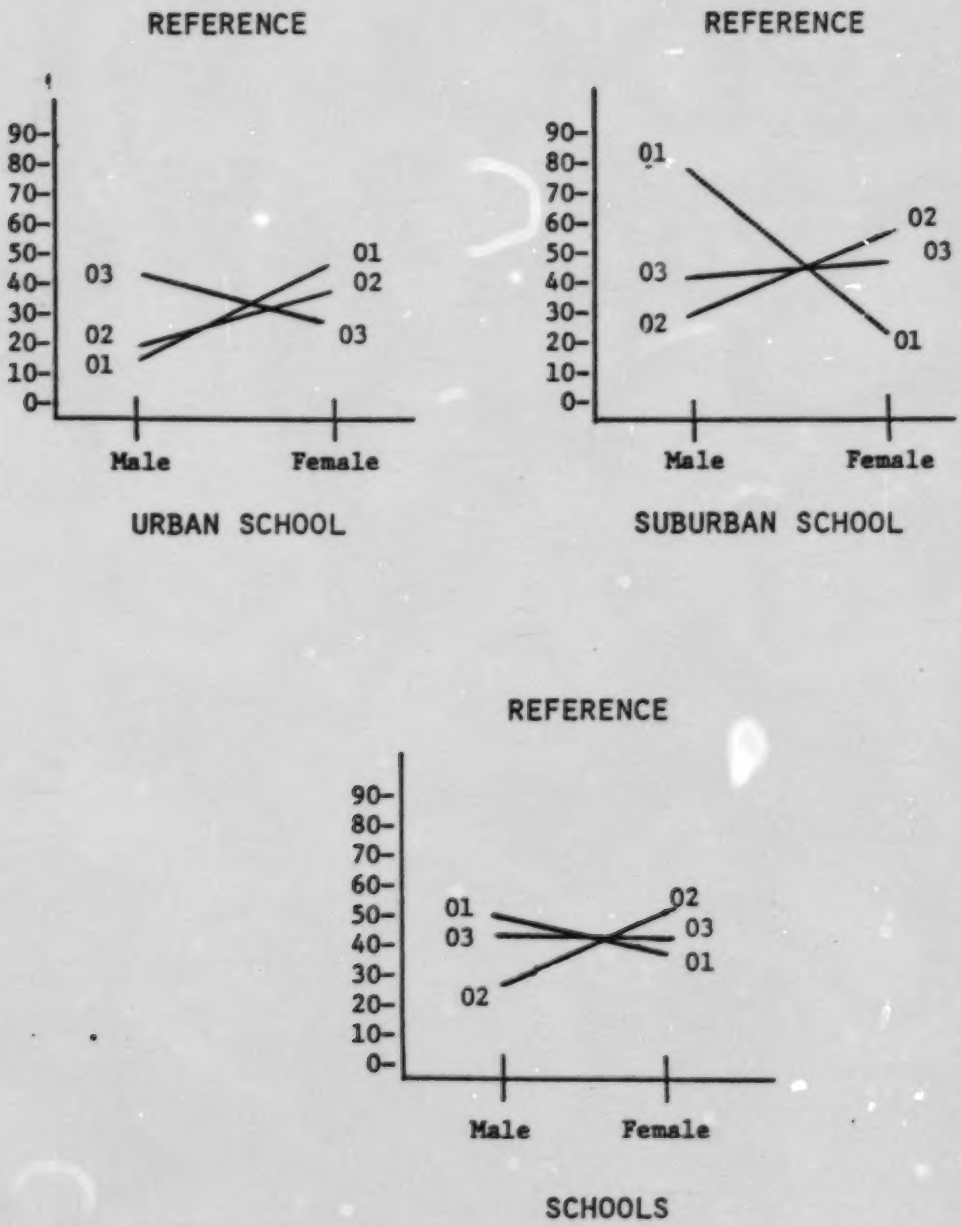

Figure C.1. Observation as a Function of Sex and School for School by Sex by Observation Interaction in Retelling (K-1)

Table C.4

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for School by Sex by Observation -- (K-1)

Cohesion Category	Discriminant Function Coefficients	Univariate F Tests (2, 32)	$p <$
Restricted Exophoric Reference	.469	1.72	.20
Reference	1.001	5.68	.008
Ellipsis	.570	1.43	.25
Conjunction	.303	1.10	.35
Lexical Cohesion	.659	1.19	.32

Table C.5

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation -- (K-1)

Cohesion Category	Discriminant Function Coefficients	Univariate F Tests (2, 32)	$p <$
Restricted Exophoric Reference	.192	6.53	.004
Reference	-.528	.15	.86
Ellipsis	-.572	1.03	.37
Conjunction	-.467	4.54	.02
Lexical Cohesion	-.821	18.78	.001

Table C. 6

Means and Standard Deviations of Cohesion Categories in Writing
by School, Sex, and Observation -- (K-1)

School	Sex	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
			$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Urban			.05	.10	.38	.22	.01	.03	.10	.12	.33	.21
	Males		.03	.09	.33	.25	.01	.03	.11	.14	.33	.24
		1	.05	.11	.17	.38	.00	.00	.00	.00	.00	.00
		2	.00	.00	.23	.27	.00	.00	.02	.04	.19	.26
		3	.00	.00	.46	.23	.01	.02	.09	.13	.49	.11
	Females		.06	.10	.43	.18	.02	.02	.10	.10	.33	.19
		1	.15	.16	.49	.20	.00	.00	.00	.00	.22	.25
		2	.03	.04	.41	.24	.03	.04	.13	.15	.22	.15
		3	.00	.00	.29	.17	.02	.02	.03	.04	.50	.30
Suburban			.01	.05	.46	.25	.04	.20	.15	.11	.34	.16
	Males		.02	.06	.49	.29	.07	.29	.15	.11	.34	.17
		1	.08	.15	.81	.43	.02	.03	.04	.04	.17	.17
		2	.01	.02	.32	.30	.33	.69	.13	.17	.36	.25
		3	.00	.00	.46	.21	.00	.00	.19	.12	.39	.10
	Females		.01	.02	.44	.22	.01	.05	.14	.11	.33	.15
		1	.02	.04	.26	.35	.00	.00	.02	.05	.12	.17
		2	.00	.00	.59	.26	.00	.00	.06	.09	.41	.12
		3	.00	.00	.52	.24	.05	.11	.10	.10	.37	.17
Observation Means:		1	.07	.12	.43	.31	.01	.03	.10	.10	.24	.19
		2	.01	.02	.39	.21	.06	.25	.16	.14	.33	.16
		3	.01	.02	.44	.18	.02	.05	.13	.10	.42	.17

Table C.7

Cohesion MANOVA in Dictation and Writing by Dialect Sex, Mode, and Observation -- at Urban School (K-1)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	19				
Dialect (A)	1	5.00	12.00	1.67	.22
Sex (B)	1	5.00	12.00	1.48	.27
Dialect X Sex (AB)	1	5.00	12.00	.58	.71
S/AB	16				
Within Subjects	100				
Mode (C)	1	5.00	12.00	19.25	.001
Dialect X Mode (AC)	1	5.00	12.00	1.77	.19
Sex X Mode (BC)	1	5.00	12.00	.88	.53
Dialect X Sex X Mode (ABC)	1	5.00	12.00	1.32	.32
SC/AB	16				
Observation (D)	2	10.00	56.00	6.79	.001
		4.00	28.50	4.13	.009
Dialect X Observation (AD)	2	10.00	56.00	1.09	.39
		4.00	28.50	.61	.66
Sex X Observation (BD)	2	10.00	56.00	1.42	.20
		4.00	28.50	1.74	.17
Dialect X Sex X Observation (ABD)	2	10.00	56.00	.98	.47
		4.00	28.50	.67	.62
SD/AB	32				
Mode X Observation (CD)	2	10.00	56.00	2.45	.02
		4.00	28.50	.25	.91
Dialect X Mode X Observation (ACD)	2	10.00	56.00	1.10	.38
		4.00	28.50	.46	.76
Sex X Mode X Observation (BCD)	2	10.00	56.00	.57	.83
		4.00	28.50	.22	.93
Dialect X Sex X Mode X Observation (ABCD)	2	10.00	56.00	.99	.46
		4.00	28.50	.27	.90
SCD/AB	32				
TOTAL	119				

Table C.8

Cohesion MANOVA in Dictation by Dialect, Sex, and Observation -- at the Urban School (K-1)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	19				
Dialect (A)	1	5.00	12.00	.14	.98
Sex (B)	1	5.00	12.00	1.11	.41
Dialect X Sex (AB)	1	5.00	12.00	.65	.67
S/AB	16				
Within Subjects	40				
Observation (C)	2	10.00	56.00	3.36	.002
		4.00	28.50	3.39	.02
Dialect X Observation (AC)	2	10.00	56.00	.70	.72
		4.00	28.50	.37	.83
Sex X Observation (BC)	2	10.00	56.00	.73	.69
		4.00	28.50	.40	.81
Dialect X Sex X Observation (ABC)	2	10.00	56.00	.68	.74
		4.00	28.50	.37	.83
SC/AB	32				
TOTAL	59				

Table C.9

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Dictation for Observation at Urban School (K-1)

Cohesion Category	Discriminant Function Coefficients		Univariate F Tests (2, 32)	$p <$
	Root 1	Root 2		
Restricted Exophoric Reference	0.034	-1.337	5.24	.01
Reference	-1.332	-3.366	.12	.88
Ellipsis	0.326	-0.736	3.05	.06
Conjunction	-0.649	-2.913	3.84	.03
Lexical Cohesion	-1.664	-2.971	5.57	.008

Table C.10

Means and Standard Deviations of Cohesion Categories
by Mode and Observation at the Urban School (K-1)

Mode	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Dictation		.05	.08	.42	.13	.02	.03	.17	.10	.38	.17
	1	.10	.12	.42	.11	.02	.04	.15	.09	.32	.09
	2	.03	.04	.42	.14	.02	.02	.21	.12	.33	.07
	3	.03	.03	.40	.18	.01	.01	.14	.08	.47	.24
Writing		.07	.24	.34	.40	.01	.02	.03	.08	.20	.24
	1	.08	.15	.23	.33	.00	.00	.00	.00	.07	.16
	2	.01	.02	.33	.40	.01	.03	.06	.10	.15	.22
	3	.14	.39	.47	.44	.01	.01	.04	.08	.36	.25
Observation Overall:	1	.09	.13	.32	.26	.01	.03	.08	.10	.20	.18
	2	.02	.03	.38	.30	.02	.02	.14	.14	.24	.19
	3	.08	.28	.44	.33	.00	.01	.09	.09	.42	.25

Table C.11

Cohesion MANOVA by Dialect, Sex, and Observation in Writing for Urban School (K-1)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	19				
Dialect (A)	1	5.00	12.00	3.53	.03
Sex (B)	1	5.00	12.00	0.76	.60
Dialect X Sex (AB)	1	5.00	12.00	1.49	.26
S/AB	16				
Within Subjects	40				
Observation (C)	2	10.00	56.00	5.02	.001
		4.00	28.50	2.22	.09
Dialect X Observation (AC)	2	10.00	56.00	1.23	.29
		4.00	28.50	.66	.62
Sex X Observation (BC)	2	10.00	56.00	1.16	.34
		4.00	28.50	.94	.46
Dialect X Sex X Observation (ABC)	2	10.00	56.00	1.37	.22
		4.00	28.50	.87	.49
SC/AB	32				
TOTAL	59				

Table C.12

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Dialect at Urban School (K-1)

Cohesion Category	Discriminant Function Coefficients	Univariate F Tests (1, 16)	p.<
Restricted Exophoric Reference	0.607	1.40	.26
Reference	1.215	.00	.99
Ellipsis	-0.410	3.57	.08
Conjunction	0.069	1.55	.23
Lexical Cohesion	-1.301	6.95	.02

Table C. 13

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation at Urban School (K-1)

Cohesion Category	Discriminant Function Coefficients	Univariate F Tests (2, 32)	p.<
Restricted Exophoric Reference	0.411	1.39	.26
Reference	0.747	2.66	.09
Ellipsis	-0.042	2.37	.11
Conjunction	0.067	3.19	.05
Lexical Cohesion	1.024	13.10	.001

Table C.14

Means and Standard Deviations of Cohesion Categories in Writing by Dialect at Urban School (K-1)

Dialect	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Vernacular	.08	.24	.38	.36	.01	.02	.10	.11	.25	.23
Nonvernacular	.05	.10	.38	.22	.01	.03	.10	.12	.33	.21

Table C.15

Cohesion MANOVA in Dictation and Writing by
Sex, Mode, and Observation -- Suburban School (K-1)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	13				
Sex (A)	1	5.00	8.00	.66	.67
S/A	12				
Within Subjects	70				
Mode (B)	1	5.00	8.00	4.04	.04
Sex X Mode (AB)	1	5.00	8.00	1.29	.36
SB/A	12				
Observation (C)	2	10.00	40.00	3.34	.003
		4.00	20.50	.73	.58
Sex X Observation (AC)	2	10.00	40.00	.74	.69
		4.00	20.50	.45	.77
SC/A	24				
Mode X Observation (BC)	2	10.00	40.00	2.48	.02
		4.00	20.50	.66	.63
Sex X Mode X Observation (ABC)	2	10.00	40.00	.97	.49
		4.00	20.50	.63	.64
SBC/A	24				
TOTAL	83				

Table C.16

Cohesion MANOVA in Dictation by Sex and Observation at the Suburban School (K-1)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	13				
Sex (A)	1	5.00	8.00	1.42	.31
S/A	12				
Within Subjects	28				
Observation (B)	2	10.00 4.00	40.00 20.50	1.46 .43	.19 .79
Sex X Observation (AB)	2	10.00 4.00	40.00 20.50	.65 .35	.76 .84
SB/A	24				
TOTAL	41				

Table C.17

Cohesion MANOVA by Sex and Observation in Writing at Suburban School (K-1)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	13				
Sex (A)	1	5.00	8.00	0.87	.54
S/A	12				
Within Subjects	28				
Observation (B)	2	10.00 4.00	40.00 20.50	2.95 0.64	.007 .64
Sex X Observation (AB)	2	10.00 4.00	40.00 20.50	0.96 0.60	.49 .67
SB/A	24				
TOTAL	41				

Table C.18

Standard Discriminant Function Coefficients and Univariate ANOVAs on Use of Cohesion Categories in Writing for Observation at Suburban School (K-1)

Cohesion Category	Discriminant Function Coefficients	Univariate F Tests (2, 24)	$p <$
Restricted Exophoric Reference	-.584	.83	.45
Reference	-.400	.16	.86
Ellipsis	-.634	.89	.43
Conjunction	-.560	4.03	.03
Lexical Cohesion	-.985	10.74	.001

Table C.19

Means and Standard Deviations of Cohesion Categories by Mode and Observation at the Suburban School (K-1)

Mode	Observation	R Exo Ref		Reference		Ellipsis		Conjunction		Lexical	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Dictation		.01	.01	.42	.12	.01	.03	.21	.06	.37	.11
	1	.01	.02	.42	.19	.01	.02	.21	.05	.38	.15
	2	.01	.01	.38	.06	.01	.02	.22	.09	.40	.09
	3	.00	.00	.47	.06	.02	.04	.20	.08	.34	.10
Writing		.03	.12	.48	.35	.05	.24	.10	.11	.29	.20
	1	.03	.09	.52	.53	.01	.02	.04	.06	.13	.17
	2	.06	.19	.44	.26	.12	.42	.11	.13	.35	.20
	3	.00	.00	.48	.19	.03	.07	.15	.12	.38	.15
Observation Overall:	1	.02	.07	.47	.39	.01	.02	.12	.10	.26	.20
	2	.03	.14	.41	.19	.07	.30	.17	.12	.37	.15
	3	.00	.01	.47	.14	.02	.06	.17	.10	.36	.13

APPENDIX D

Story Structure MANOVAs in Retelling Dictation and Writing at Urban (K-1) and Suburban Schools (K-1)

APPENDIX D

Story Structure MANOVAs in Retelling Dictation and Writing at Urban (K-1) and Suburban Schools (K-1)

Seven multivariate analyses of variance, followed up by discriminant and univariate analyses, were employed to compare story structure data. In the first of these MANOVAs, frequencies of function types, functions, and moves for urban-school dictation and writing were organized into a design where dialect and sex were between-subjects factors and where mode and observation were within-subjects factors. Subsequent urban-school MANOVAs analyzed story structure data for each mode separately using essentially the same designs, with, of course, the mode factor eliminated as a comparison. The suburban school MANOVAs for story structure data followed the same pattern, without a dialect comparison. In the suburban-school MANOVAs, sex was the between-subjects comparison, while mode and observation served as within-subjects factors. In subsequent separate comparisons for each mode, observation served as the within-subjects factors.

The first MANOVA, comparing urban-school dictation and writing data, resulted in a significant multivariate test statistic for the mode and observation factors (See Table D.1). No significant first- and second-order interactions were indicated by this analysis. Univariate follow-up procedures resulted in significant test statistics for the mode factor on function types, functions and moves (See Table D.2). Dictation means were significantly higher than writing means (See Table D.4) for all three dependent variables. Moves, made the strongest contribution to the discriminant function followed by functions, then function types.

Follow-up procedures for the observation factor also indicated that all three dependent variables contributed about equally to the discriminant function, and that all three increased significantly over observations. Tukey post hoc comparisons of means (See Table D.4) for moves indicated that number of moves increased significantly at observation two, but declined slightly at observation three -- still, however, significantly higher than observation one.

The story structure MANOVA for dictation at the urban school produced a significant effect for the observation factor (See Table D.5). After removal of the effects associated with the first root for the observation factor, a significant discrimination remained for the second root. The first root appeared to be composed mainly of variance associated with function types while the second root appeared to be composed of variance associated with functions and moves. All three story structure variables achieved significant univariate test statistics for the observation factor (See Table D.6). Tukey post hoc comparisons for function types indicated a significant increase in frequencies at observation two and a significant decrease in frequencies at observation three. Function types followed the same pattern. Moves increased significantly at observation two but declined slightly at observation three but still significantly higher at observation three than at observation one. Means and standard deviations are displayed in Table D.4.

No significant effects were indicated by the urban school MANOVA for writing (See Table D.7).

The kindergarten MANOVA for story structure data in retelling produced significant main effects for the observation factor, a significant second-order dialect by sex by observation interaction, and a significant

first-order dialect by observation interaction. Follow-up discriminant and univariate analyses of the dialect by sex by observation interaction (See Table D.9) indicated no significant univariate effects for function types, functions or moves. Therefore, the second order interaction was probed with follow-up techniques (See Table D.10) for the dialect by observation interaction indicating significant univariate test statistics for function types and functions. (See Table D.10). Tukey post hoc comparisons for retelling means demonstrated that nonvernacular means decreased significantly at observation two and increased significantly at observation three, while vernacular means for function types increased significantly at observation two, then remained stable through first grade. A similar interaction was indicated for functions (See Figure D.1.). Means and standard deviations for dialect by observation are displayed in Table D.9. Tukey post hoc comparisons of mean differences for the functions interaction indicated that vernacular means increased significantly at observation two, then declined with no significant difference remaining between observations one and three. Nonvernacular means increased significantly at observation three producing differences between observations one and three and two and three.

Observation factor follow-ups were not pursued given the significant disordinal dialect by observation interaction.

The suburban-school story structure MANOVA for dictation and writing produced no significant multivariate test statistics (See Tables D.11, D.12, and D.13). Only the story structure MANOVA for retelling produced a significant multivariate effect--a significant test statistic for the observation factor (See Table D.14). After effects associated with the

leading root for observation were removed, a significant discrimination remained. The first root appeared to be composed primarily of variance associated with moves, which declined significantly between observations one and two and between observations one and three, and with function types, which decreased significantly between observations one and two but increased significantly between observations two and three. Function types and functions contributed strongly to the second root--function types and functions following very different patterns across observations (See Table D.15). Means and standard deviations for suburban school (K-1) story structure variables by observation are presented in Table D.16.

Table D.1

Story Structure MANOVA in Dictation and Writing
by Dialect, Mode and Observation at Urban School (K-1)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	9				
Dialect (A)	1	3.00	6.00	.15	.92
S/A	8				
Within Subjects	50				
Mode (B)	1	3.00	6.00	20.00	.002
Dialect X Mode (AB)	1	3.00	6.00	1.22	.38
SB/A	8				
Observation (C)	2	6.00	28.00	3.62	.009
		2.00	14.50	2.35	.13
Dialect X Observation (AC)	2	6.00	28.00	.89	.51
		2.00	14.50	.22	.80
SC/A	16				
Mode X Observation (BC)	2	6.00	28.00	1.93	.11
		2.00	14.50	1.66	.22
Dialect X Mode X Observation (ABC)	2	6.00	28.00	.38	.88
		2.00	14.50	.56	.58
SBC/A	16				
TOTAL	59				

Table D.2

Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Mode Effect for Urban School (K-1)

Criterion	Standard Discriminant Function Coefficients	Univariate F Tests F	p. <
Types	0.091	41.27	.001
Functions	-0.359	37.13	.001
Moves	1.199	77.50	.001

Table D.3

Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Observation Effect for Urban School (K-1)

Criterion	Standard Discriminant Function Coefficients	Univariate F Test F	p. <
Types	1.457	4.29	.03
Functions	-1.616	4.80	.02
Moves	1.428	7.05	.006

Table D.4

Means and Standard Deviations of Story Structure Data for Urban School by Mode and Observation

Mode	Observation	Functions		Types		Moves	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Dictation		6.82	7.17	4.42	3.79	1.53	1.38
	1	4.50	6.03	3.40	4.52	.95	1.05
	2	10.25	8.11	6.35	3.27	1.95	1.28
	3	5.70	6.17	3.50	2.76	1.70	1.63
Writing		.77	1.91	.73	1.79	.25	.51
	1	.20	.89	.20	.89	.05	.22
	2	.85	2.01	.75	1.65	.30	.57
	3	1.25	2.43	1.25	2.43	.40	.60
Observation Means:							
	1	2.35	3.43	1.80	2.78	.57	.98
	2	5.55	6.10	3.55	1.89	1.12	1.09
	3	3.97	4.24	2.37	2.51	1.05	1.03

Table D.5

Story Structure MANOVA in Dictation by
Dialect, Sex, and Observation -- for Urban School (K-1)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	19				
Dialect (A)	1	3.00	14.00	.72	.55
Sex (B)	1	3.00	14.00	1.64	.23
Dialect X Sex (AB)	1	3.00	14.00	1.38	.29
S/AB	16				
Within Subjects	40				
Observation (C)	2	6.00	60.00	3.05	.01
		2.00	30.50	3.23	.05
Dialect X Observation (AC)	2	6.00	60.00	.85	.54
		2.00	30.50	.49	.62
Sex X Observation (BC)	2	6.00	60.00	.94	.48
		2.00	30.50	1.15	.33
Dialect X Sex X Observation (ABC)	2	6.00	60.00	1.02	.42
		2.00	30.50	.80	.46
SC/AB	32				
TOTAL	59				

Table D.6

Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Observation Effect in Dictation for Urban School (K-1) -- Story Structure

Criterion	Standard Discriminant Function Coefficients Root 1	Root 2	Univariate F Tests F	p. <
Types	.917	.069	6.31	.005
Functions	-.120	1.087	5.03	.01
Moves	.315	-1.514	4.42	.02

Table D.7

Story Structure MANOVA in Writing by Dialect, Sex, and Observation -- for Urban School (K-1)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	19				
Dialect (A)	1	3.00	14.00	1.31	.31
Sex (B)	1	3.00	14.00	.53	.67
Dialect X Sex (AB)	1	3.00	14.00	.47	.71
S/AB	16				
Within Subjects	40				
Observation (C)	2	6.00	60.00	1.83	.11
		2.00	30.50	1.37	.27
Dialect X Observation (AC)	2	6.00	60.00	1.24	.30
		2.00	30.50	.70	.51
Sex X Observation (BC)	2	6.00	60.00	.45	.84
		2.00	30.50	.34	.72
Dialect X Sex X Observation (ABC)	2	6.00	60.00	.47	.83
		2.00	30.50	.34	.71
SC/AB	32				
TOTAL	59				

Table D.8

Story Structure MANOVA in Retelling by Dialect, Sex, and Observation -- for Urban School (K-1)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	19				
Dialect (A)	1	3.00	14.00	1.52	.25
Sex (B)	1	3.00	14.00	.10	.96
Dialect X Sex (AB)	1	3.00	14.00	1.30	.31
S/AB	16				
Within Subjects	40				
Observation (C)	2	6.00	60.00	5.89	.001
		2.00	30.50	.53	.59
Dialect X Observation (AC)	2	6.00	60.00	6.13	.001
		2.00	30.50	1.74	.19
Sex X Observation (BC)	2	6.00	60.00	2.05	.07
		2.00	30.50	1.24	.30
Dialect X Sex X Observation (ABC)	2	6.00	60.00	2.35	.04
		2.00	30.50	.45	.64
SC/AB	32				
TOTAL	59				

Table D.9

Means and Standard Deviations for Function Types and Functions at Urban School (K-1) by Dialect and Observation

Dialect	Observation	Function Types		Functions	
		M	SD	M	SD
Vernacular					
	1	6.50	3.77	7.30	4.09
	2	8.00	2.62	10.03	3.82
	3	7.20	4.69	9.60	7.43
Nonvernacular					
	1	9.50	4.54	13.40	7.79
	2	8.10	2.71	10.90	5.21
	3	13.30	4.79	19.40	8.97
Overall		8.77	4.53	11.82	7.47
	1	8.00	4.26	10.35	6.68
	2	8.05	3.25	10.60	5.10
	3	10.25	5.63	14.50	9.55

Table D.10

Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Dialect by Observation Interaction in Retelling for Urban School(K-1)-- Story Structure

Criterion	Standard Discriminant Function Coefficients	Univariate *F* Tests *F*	*p*.<
Types	0.704	9.48	.001
Functions	1.026	5.28	.01
Moves	-1.392	1.81	.18

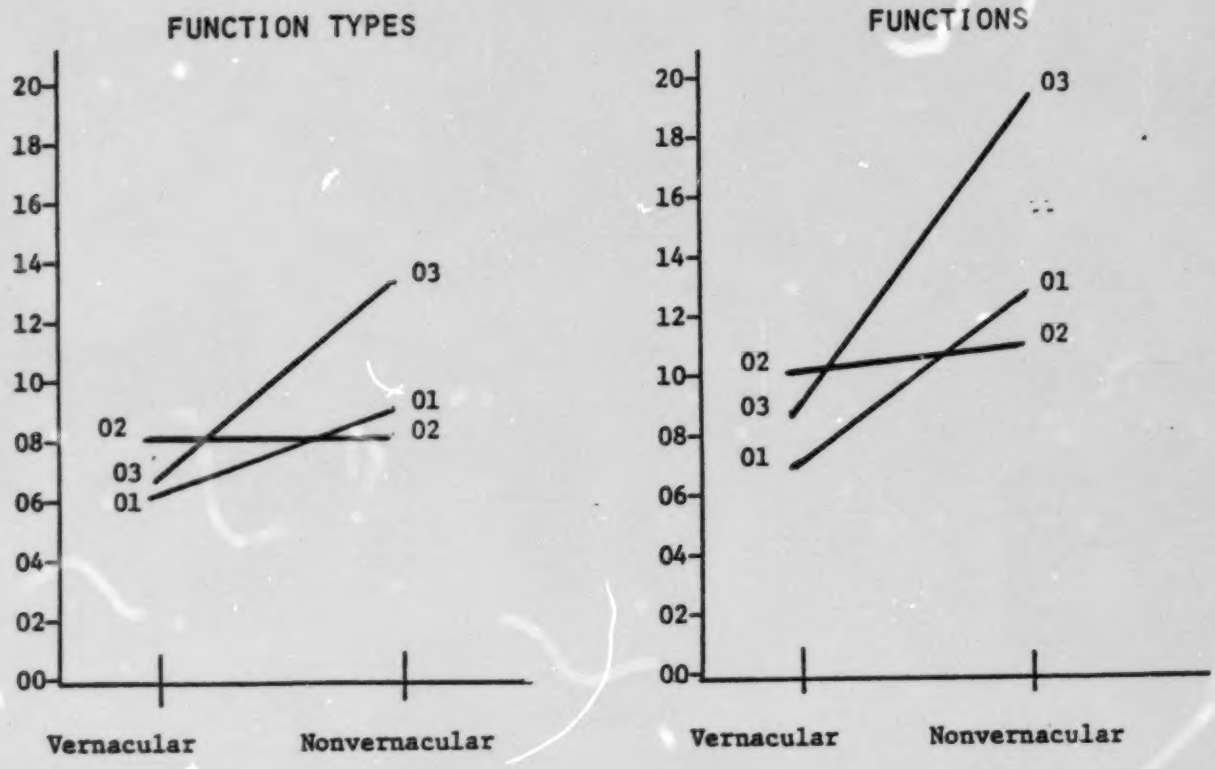

Figure D.1. Observation as a Function of Dialect at Urban School (K-1) for Function Types and Functions

Table D.11

Story Structure MANOVA by Sex, Mode, and Observation -- for Suburban School (K-1) -- Dictation and Writing

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	9				
Sex (A)	1	3.00	6.00	1.32	.35
S/A	8				
Within Subjects	50				
Mode (B)	1	3.00	6.00	3.46	.09
Sex X Mode (AB)	1	3.00	6.00	3.75	.08
SB/A	8				
Observation (C)	2	6.00	28.00	.91	.50
		2.00	14.50	.12	.89
Sex X Observation (AC)	2	6.00	28.00	.49	.81
		2.00	14.50	.06	.94
SC/A	16				
Mode X Observation (BC)	2	6.00	28.00	1.37	.26
		2.00	14.50	.82	.46
Sex X Mode X Observation (ABC)	2	6.00	28.00	.52	.79
		2.00	14.50	.35	.71
SBC/A	16				
TOTAL	59				

Table D.12

Story Structure MANOVA in Dictation by
Sex and Observation -- for Suburban School (K-1)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	9				
Sex (A)	1	3.00	6.00	3.47	.09
S/A	8				
Within Subjects	20				
Observation (B)	2	6.00	28.00	.42	.86
		2.00	14.50	.21	.81
Sex X Observation (AB)	2	6.00	28.00	.52	.79
		2.00	14.50	.18	.84
S8/A	16				
TOTAL	29				

Table D.13

Story Structure MANOVA in Writing by
Sex and Observation -- Suburban School (K-1)

Source	df	dfHYP	dfERR	F	p.<
Between Subjects	9				
Sex (A)	1	3.00	6.00	1.17	.40
S/A	8				
Within Subjects	20				
Observation (B)	2	6.00	28.00	1.92	.34
		2.00	14.50	.31	.74
Sex X Observation (AB)	2	6.00	28.00	.79	.58
		2.00	14.50	.15	.86
SB/A	16				
TOTAL	29				

Table D.14

Story Structure MANOVA in Retelling by Sex and Observation -- for Suburban School (K-1)

Source	df	dfHYP	dfERR	F	p. <
Between Subjects	9				
Sex (A)	1	3.00	6.00	1.80	.25
S/A	8				
Within Subjects	20				
Observation (B)	2	6.00	28.00	8.49	.001
		2.00	14.50	3.63	.05
Sex X Observation (AB)	2	6.00	28.00	2.36	.06
		2.00	14.50	1.53	.25
SB/A	16				
TOTAL	29				

Table D.15

Discriminant Function Coefficients and Univariate ANOVAs as Follow-up to Observation Effect in Retelling for Suburban School (K-1) -- Story Structure

Criterion	Standard Discriminant Function Coefficients Root 1	Root 2	Univariate F Tests F	p. <
Types	1.091	-2.044	4.13	.04
Functions	0.921	1.787	2.06	.16
Moves	-2.066	-0.552	5.70	.01

Table D.16

Means and Standard Deviations of Story Structure Data in Retelling for Suburban School by Observation (K-1)

Observation	Functions		Types		Moves	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1	16.20	5.87	12.00	4.03	2.40	.70
2	12.70	5.89	8.80	3.19	1.70	.48
3	17.10	6.59	13.20	5.05	1.50	.53

APPENDIX E

Text Length and Syntactic Complexity

APPENDIX E

Text Length and Syntactic Complexity

Text length and syntactic complexity have been employed in a variety of language acquisition studies as convenient measures to equate language samples being studied. Both of these measures have been the subjects of considerable discussion regarding their meaning, utility, and reliability. But, because utterance length and syntactic complexity have been so widely utilized, they have become benchmarks to the field, and, accordingly, length of dictated and written texts, measured by number of T-Units, and syntactic complexity of these texts, measured by mean T-Unit length, have been analyzed to provide a basis for comparison with other language development research and earlier writing research. While we question whether text length and mean utterance length shed much light on writing development, these measures and comparisons may be of interest to other researchers in the field.

Text Length: Dictation and writing

Three separate ANOVAs were employed to compare length of dictated and written texts produced by: (1) kindergarten children in both urban and suburban schools, (2) kindergarten children in the urban school, and (3) kindergarten children in the suburban school. Three additional ANOVAs were employed to compare length of dictated texts produced by: (1) kindergarten children in both schools, (2) kindergarten children in the urban school, and (3) kindergarten children in the suburban school. Conservative *F* tests were employed for all significant effects involving within-subjects factors, and for all Tukey follow-up comparisons.

School comparisons: School and sex served as between-subjects factors while mode and observations served as within-subjects factors

for this comparison. Table E.1 presents means and standard deviations of text length for dictation and writing produced by kindergarten children at both schools. Significant test statistics were obtained

Table E.1

Means and Standard Deviations of Text Length in Dictation and Writing for both Schools (K-1) -- by Mode and Observation

Mode	Observation	Mean	SD
Dictation		22.22	26.40
	1	12.00	10.76
	2	25.60	32.11
	3	29.05	29.10
Writing		6.32	6.15
	1	2.45	2.09
	2	6.05	5.20
	3	10.45	7.24
Observation Overall:	1	7.23	9.05
	2	15.83	24.77
	3	19.75	22.95

for the observation and mode factors (See Table E.2). As might be expected, dictated texts were significantly longer than written texts. Tukey post-hoc tests indicated that texts were significantly longer at each observation.

Table E.2

ANOVA of Text Length in Dictation and Writing
by School, Sex, Mode, and Observation (K-1)

Source	df	MS	F	p. <
Between Subjects	19			
School (A)	1	952.05	3.00	.10
Sex (B)	1	172.78	.54	.47
School X Sex (AB)	1	17.64	.06	.82
S/AB	16	317.75		
Within Subjects	100			
Mode (C)	1	7584.09	22.58*	.001
School X Mode (AC)	1	770.10	2.29	.15
Sex X Mode (BC)	1	20.83	.06	.81
School X Sex X Mode (ABC)	1	258.12	.77	.39
SC/AB	16	335.89		
Observation (D)	2	1641.55	5.62*	.008
School X Observation (AD)	2	594.61	2.04	.15
Sex X Observation (BD)	2	617.54	2.12	.14
School X Sex X Observation (ABD)	2	1038.78	3.56**	.04
SD/AB	32	291.99		
Mode X Observation (CD)	2	304.65	1.05	.36
School X Mode X Observation (ACD)	2	578.58	1.99	.15
Sex X Mode X Observation (BCD)	2	341.08	1.18	.32
School X Sex X Mode X Observation (ABCD)	2	921.77	3.18	.06
SCD/AB	32	290.11		
TOTAL	119			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was significant at p. < .05.

** Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 32) was not significant at p. < .05.

Urban school: In the urban school ANOVA for text length, dialect and sex were between subjects factors and mode and observation were within-subjects factors. Table E.3 presents means and standard

Table E.3

Means and Standard Deviations of Text Length in Dictation and Writing at Urban School (K-1)--by Sex, Mode and Observation

Mode	Sex	Observation	$\bar{X}$	S.D.
Dictation			27.93	31.13
	Male		27.53	32.87
		1	17.80	19.71
		2	16.50	12.49
		3	48.30	47.08
	Female		28.33	29.85
		1	12.70	13.91
		2	48.10	42.21
		3	24.20	13.07
Writing			4,57	6.59
	Male		4.13	6.26
		1	0.60	1.08
		2	3.60	6.42
		3	8.20	7.18
	Female		5.00	6.98
		1	2.20	2.53
		2	4.50	7.09
		3	8.30	8.91
Sex Overall:				
	Males			
		1	9.20	10.40
		2	10.05	9.46
		3	28.25	24.08
	Females			
		1	7.45	8.22
		2	26.30	24.65
		3	16.25	10.99
Observation Overall:				
		1	8.33	9.44
		2	18.18	20.48
		3	22.25	21.85

deviations for text length by mode, sex, and observation. Significant test statistics were obtained for a second-order, sex by mode by observation interaction, for a first-order, sex by observation interaction, and for mode and observation main effects (See Table E.4).

Table E.4

ANOVA of Text Length in Dictation and Writing at the Urban School -- by Dialect, Sex, Mode, and Observation

Source	df	MS	F	p.<
Between Subjects	19			
Dialect (A)	1	83.32	.15	.71
Sex (B)	1	20.83	.04	.85
Dialect X Sex (AB)	1	19.20	.03	.86
S/AB	16	561.67		
Within Subjects	100			
Mode (C)	1	16379.65	27.58*	.001
Dialect X Mode (AC)	1	172.79	.29	.60
Sex X Mode (BC)	1	.03	.00	.99
Dialect X Sex X Mode (ABC)	1	128.12	.22	.65
SC/AB	16	593.87		
Observation (D)	2	2050.17	5.06*	.01
Dialect X Observation (AD)	2	381.25	.94	.40
Sex X Observation (BD)	2	2045.11	5.05*	.01
Dialect X Sex X Observation (ABD)	2	129.17	.32	.73
SD/AB	32	405.14		
Mode X Observation (CD)	2	679.39	1.70	.20
Dialect X Mode X Observation (ACD)	2	270.46	.68	.52
Sex X Mode X Observation (BCD)	2	1966.16	4.92*	.01
Dialect X Sex X Mode X Observation (ABCD)	2	18.26	.05	.96
SCD/AB	32	399.37		
TOTAL	119			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was significant at p. < .05.

The significant second-order, sex by mode by observation interaction is graphed in Figure E.1. Females dictated significantly longer texts at observation 2 than at observation one or three while males dictated

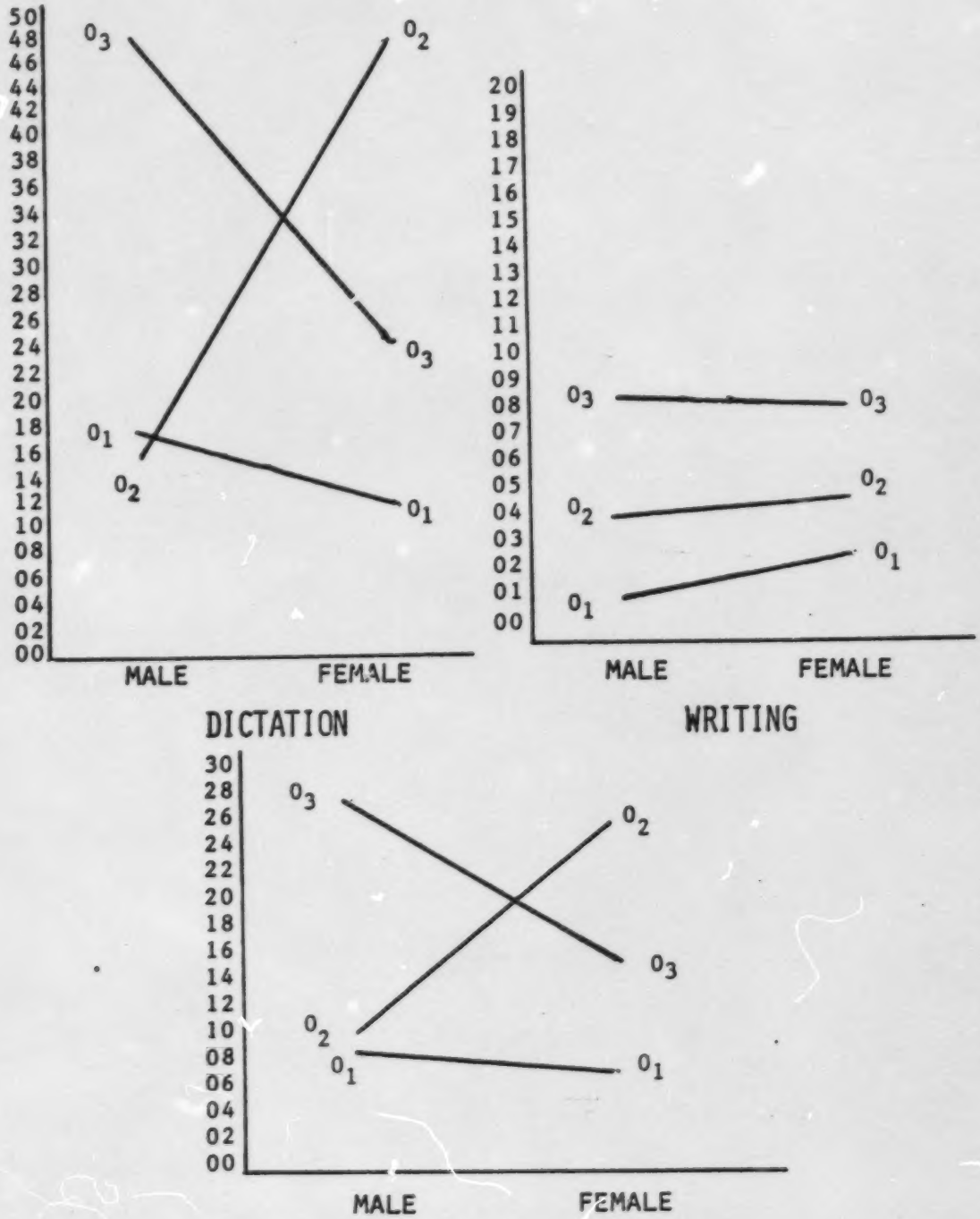

Figure E.1 Observation as a Function of Sex and Mode on Text Length for Urban School (K-1)

significantly longer texts at observation 3 than at observation one or two. Tukey post hoc tests indicated that girls dictated significantly longer texts than boys at observation 2 while boys dictated significantly longer texts at observation three than did girls. As shown in Figure E.1, overall girls produced significantly longer texts at observation 2 than they did at observation 1. Girls' texts at observation 2 were significantly longer than boys' texts at either observation 1 or observation 2. Boys produced significantly longer texts at observation 3 than at observation 2, and significantly longer texts at observation 2 than they did at observation 1. Tukey follow-up procedures for the mode effect indicated that dictated texts (M=27.93) were significantly longer than written texts (M=4.57). Because the pattern for text length across the three observations was not the same for boys and girls, no attempt was made to interpret the main effect for observation.

Suburban school: Design arrangements for the suburban ANOVA on dictation and writing were similar to school and urban comparisons noted above: sex served as a between-subjects factor while mode and observation served as within-subjects factors. Table E.5 presents means and standard deviations for text length in the suburban kindergarten texts. Table E.6 summarizes the ANOVA results--main effects for sex and mode, and a significant first-order, sex X mode interaction. The sex X mode interaction (See Figure E.2) indicated that girls dictated significantly longer texts than boys but wrote texts of roughly the same length that boys wrote. Because the patterns of text length differed for boys and girls in dictation, no attempt will be made to interpret the main effect for sex, but Tukey post hoc tests indicated that dictated texts were significantly longer than written texts for both sexes, thus

accounting for the significant mode factor effect.

Table E.5

Means and Standard Deviations of Text Length in Dictation and Writing by Sex, Mode, and Observation at Suburban School (K-1)

Sex	Mode	Observation	$\bar{X}$	SD
Males			9.82	6.76
	Dictation		13.40	6.91
		1	15.00	10.84
		2	14.00	5.70
		3	11.20	2.68
	Writing		6.33	4.50
		1	2.80	1.30
		2	6.40	2.97
		3	9.80	5.45
Females			13.03	12.28
	Dictation		20.33	13.48
		1	15.60	9.24
		2	16.20	11.84
		3	29.20	16.21
	Writing		5.73	4.06
		1	2.00	2.35
		2	7.60	2.88
		3	7.60	4.22
Mode				
Overall:	Dictation:		16.87	11.10
	Writing:		6.03	4.22
Observation				
Overall:		1	8.85	9.39
		2	11.05	7.62
		3	14.45	12.04

Table E.6

ANOVA of Text Length in Dictation and Writing at the Suburban School by Sex, Mode, and Observation (K-1)

Source	df	MS	F	p. <
Between Subjects	13			
Sex (A)	1	192.01	4.77	.05
S/A	12	40.26		
Within Subjects	70			
Mode (B)	1	3132.92	71.63*	.001
Sex X Mode (AB)	1	398.67	9.12	.01
SB/A	12	43.74		
Observation (C)	2	297.74	4.41**	.02
Sex X Observation (AC)	2	57.44	.85	.44
SC/A	24	67.51		
Mode X Observation (BC)	2	72.75	.93	.41
Sex X Mode X Observation (ABC)	2	122.24	1.55	.23
SBC/A	24	78.66		
TOTAL	83			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1,12) was significant at p. < .05.

** Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 12) was not significant at p. < .05.

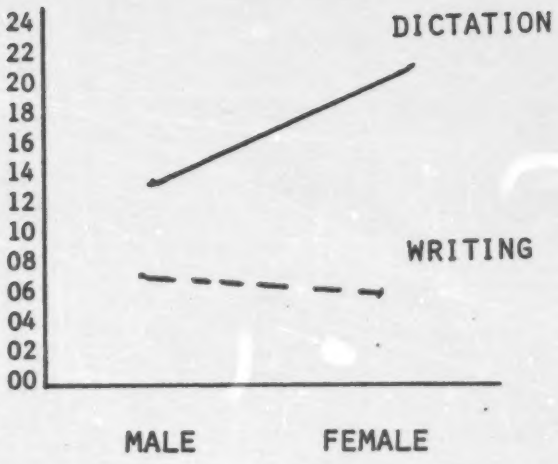

Figure E.2 Mode as a Function of Sex on Text Length for Suburban School (K-1)

Text Length in Dictation Only

Three additional ANOVAs were employed to analyze the text length variable in diccation only, again comparing schools, sex and dialect as between-subjects factors and observation as a within-subjects factor in the three respective designs. No significant main or interaction effects were obtained on the school ANOVA (See Table E.7), but for the urban school ANOVA, a significant first-order, sex X observation effect was indicated (See Table E.8), an interaction graphed earlier in Figure E.1. Means and standard deviations were presented in Table E.3. Tukey post-hoc comparisons indicated that girls dictated longer texts at observation two than at one or three while males dictated significantly longer texts at observation three than at one or two. Girls dictated significantly louger texts than boys at observation two while boys dictated significantly longer texts at observation three than did girls. For the suburban school ANOVA, a main effect for sex was indicated (See Table E.9).

Table E.7

ANOVA of Text Length in Dictation by School, Sex, and Observation (K-1)

Source	df	MS	F	p. <
Between Subjects	19			
School (A)	1	1717.36	2.78	.12
Sex (B)	1	156.82	.25	.62
School X Sex (AB)	1	205.35	.33	.57
S/AB	16	617.50		
Within Subjects				
Observation (C)	2	1625.18	2.91	.07
School X Observation (AC)	2	1135.93	2.04	.15
Sex X Observation (BC)	2	932.1[illegible]	1.67	.20
School X Sex X Observation (ABC)	2	1958.72	3.51*	.04
SC/AB	32	558.07		
TOTAL				

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 32) was not significant at p. < .05.

Table E.8

ANOVA of Text Length in Dictation by Dialect, Sex, and Observation at the Urban School (K-1)

Source	df	MS	F	p. <
Between Subjects	19			
Dialect (A)	1	8.06	.007	.93
Sex (B)	1	9.60	.01	.93
Dialect X Sex (AB)	1	24.07	.02	.89
S/AB	16	1117.41		
Within Subjects	40			
Observation (C)	2	2490.99	3.21*	.05
Dialect X Observation (AC)	2	596.60	.77	.47
Sex X Observation (BC)	2	4008.56	5.17**	.01
Dialect X Sex X Observation (ABC)	2	114.52	.15	.86
SC/AB	32	776.05		
TOTAL	59			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was not significant at p. <.50.

**Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was significant at p. < .05.

Table E.9

ANOVA of Text Length in Dictation at Suburban School (K-1) by Sex and Observation

Source	df	MS	F	p.<
Between Subjects	13			
Sex (A)	1	572.02	8.83	.01
S/A	12	64.79		
Within Subjects				
Observation (B)	2	220.50	1.56	.23
Sex X Observation (AB)	2	169.30	1.20	.32
SB/A	24	141.15		
TOTAL	41			

Means and standard deviations for text length in dictation were presented in Table E.5. Tukey post hoc comparisons indicated that girls dictated longer texts than boys at the suburban school.

Syntactic Complexity: Dictation and Writing

Three separate ANOVAs were employed to compare mean T-unit length for dictated and written texts produced by kindergarten children as above at both the urban and suburban schools and within each school.

School comparison: School and sex served as between-subjects factors; mode and observation served as within-subjects factors in this comparison. This analysis produced five significant effects (See Table E.10): school, mode and observation factors plus a second-order interaction for school by sex by observation and a first-order

Table E.10

ANOVA of Syntactic Complexity in Dictation and Writing by School, Sex, Mode, and Observation (K-1 Population)

Source	df	MS	F	p. <
Between Subjects	19			
School (A)	1	50.84	6.00	.03
Sex (B)	1	4.05	.48	.50
School X Sex (AB)	1	22.01	2.60	.13
S/AB	16	8.48		
Within Subjects	100			
Mode (C)	1	278.92	43.34*	.001
School X Mode (AC)	1	5.71	.89	.36
Sex X Mode (BC)	1	.01	.00	.97
School X Sex X Mode (ABC)	1	.11	.02	.90
SC/AB	16	6.44		
Observation (D)	2	21.34	6.02	.006
School X Observation (AD)	2	.98	.28	.76
Sex X Observation	2	2.83	.80	.46
School X Sex X Observation (ABD)	2	16.01	4.51**	.02
SD/AB	32	3.55		
Mode X Observation (CD)	2	34.62	10.15**	.001
School X Mode X Observation (ACD)	2	11.09	3.25***	.05
Sex X Mode X Observation (BCD)	2	2.60	.76	.48
School X Sex X Mode X Observation (ABCD)	2	1.37	.40	.67
SCD/AB	32	3.41		
TOTAL	119			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was significant at p. < .05.

** Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was not significant at p. < .05.

***Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was not significant at p. < .05.

interaction for mode by observation. Note that the Geisser-Greenhouse conservative F test for the school by mode by observation interaction failed to reach significance.

Table E.11

Means and Standard Deviations of Syntactic Complexity in Dictation and Writing by School, Sex and Observation (K-1)

School	Sex	Observation	Mean	S.D.
Urban			5.68	3.29
	Males		5.07	3.22
		1	4.03	1.49
		2	4.91	3.43
		3	6.27	1.61
	Females		6.29	3.29
		1	6.91	2.40
		2	5.07	2.63
		3	6.90	2.57
Suburban			6.98	2.32
	Males		7.23	1.80
		1	7.39	1.81
		2	6.97	0.85
		3	7.32	0.94
	Females		6.74	2.75
		1	5.70	2.63
		2	6.33	0.94
		3	8.19	2.47
Sex Overall				
	Males			
		1	5.71	1.65
		2	5.94	2.19
		3	6.80	1.28
	Females			
		1	6.31	2.52
		2	5.70	1.79
		3	7.55	2.52

Tukey post-hoc tests, comparing the means (See Table E.11) of the school by sex by observation interaction indicated that urban-school girls produced texts of greater syntactic complexity than urban

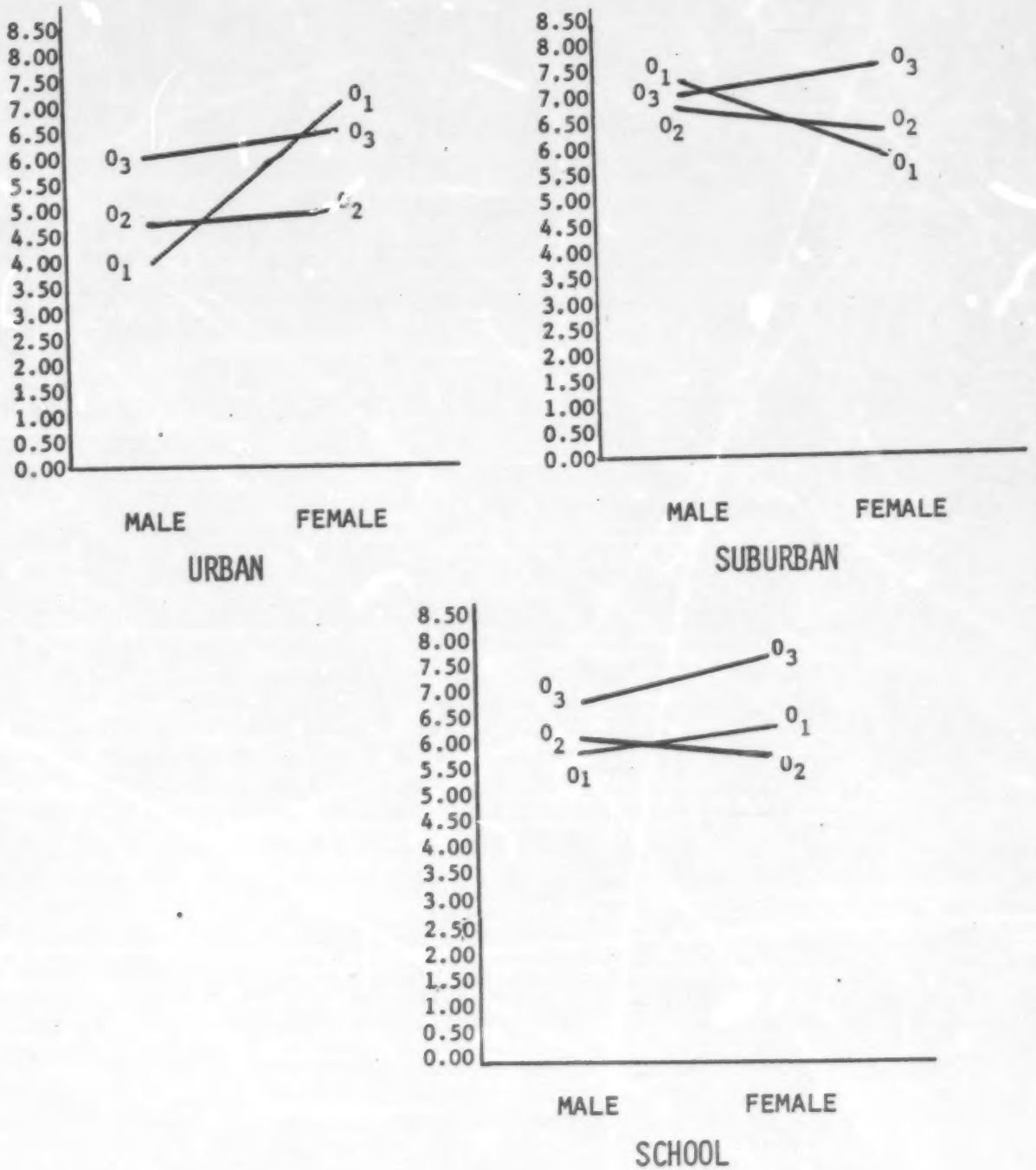

Figure E.3. Observation as a Function of Sex and School in Dictation and Writing (K-1)

boys at observation one while the converse held at the suburban school: boys produced texts of greater syntactic complexity than girls. But, at observation three, suburban girls produced texts of greater syntactic complexity than suburban boys (See Figure E.3). The disordinal character of this interaction is further indicated by the significant decrease in syntactic complexity for urban girls between observations one and two followed by a significant increase between observations two and three with no significant net gain in syntactic complexity over observations. On the other hand, syntactic complexity means for urban boys increased significantly between observations one and three. Conversely, at the suburban school, syntactic complexity means for boys did not vary significantly from observation to observation while for suburban girls, syntactic complexity means increased significantly between observations one and three and two and three. The patterns indicated by this interaction are so mixed that interpretations for both observation school factors are too risky to attempt.

For the mode by observation interaction, Tukey post hoc comparisons of means (See Table E.12) indicated that while writing means for syntactic complexity increased significantly at each observation, dictation means declined significantly between observations one and two, only to increase significantly between observations two and three to a level commensurate with observation one (See Figure E.4). Syntactic complexity means for dictation were significantly higher than for writing at every observation. The significant main effect for mode, therefore, indicated that dictated texts were significantly more complex syntactically than were written texts (See Table E.12).

Table E.12

Means and Standard Deviations of Syntactic Complexity (K-1)--by Mode and Observation

Mode	Observation	$\bar{X}$	S.D.
Dictation			
	1	8.61	2.30
	2	6.80	1.81
	3	8.17	1.77
Writing			
	1	3.41	2.49
	2	4.84	2.09
	3	6.18	2.31
Mode Overall	Dictation	7.86	2.22
	Writing	4.81	2.72

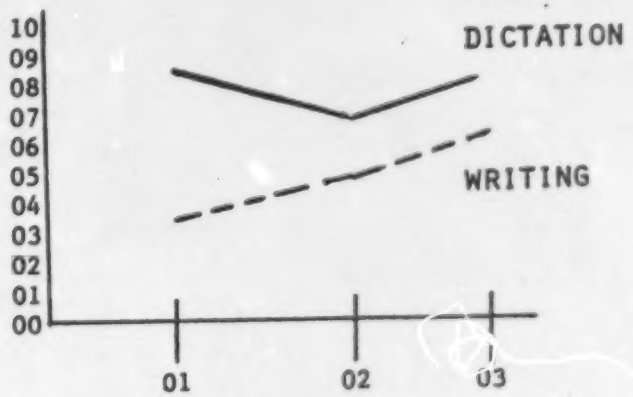

Figure E.4. Mode as a Function of Observation in Dictation and Writing (K-1)

Urban school comparison: Dialect and sex served as between-subjects factors while mode and observation served as within-subjects factors in this analysis of syntactic complexity in children's dictated and written texts. This analysis produced two second-order interactions, dialect by sex and mode by observation, and significant effects for the mode and observation factors (See Table E.13).

Table E.13

ANOVA of Syntactic Complexity in Dictation and Writing
at the Urban School (K-1) by Dialect, Sex, Mode, and Observation

Source	df	MS	F	p. <
Between Subjects	19			
Dialect (A)	1	3.22	.38	.54
Sex (B)	1	.00	.00	.99
Dialect X Sex (AB)	1	44.66	5.33	.04
S/AB	16	8.39		
Within Subjects	100			
Mode (C)	1	556.71	61.10*	.001
Dialect X Mode (AC)	1	20.29	2.23	.16
Sex X Mode (BC)	1	.56	.06	.81
Dialect X Sex X Mode (ABC)	1	.26	.03	.87
SC/AB	16	9.11		
Observation (D)	2	28.05	4.90*	.01
Dialect X Observation (AD)	2	5.50	.96	.39
Sex X Observation (BD)	2	3.93	.69	.51
Dialect X Sex X Observation (ABD)	2	9.09	1.59	.22
SD/AB	32	5.73		
Mode X Observation (CD)	2	56.04	12.37	.001
Dialect X Mode X Observation (ACD)	2	14.63	3.23**	.05
Sex X Mode X Observation (BCD)	2	.19	.04	.96
Dialect X Sex X Mode X Observation (ABCD)	2	2.87	.63	.54
SCD/AB	32	4.53		
TOTAL	119			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was significant at p. < .05.

** Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 16) was not significant at p. < .05.

For the dialect by sex interaction, Tukey post hoc comparisons (See Table E.14) indicated that syntactic complexity means were significantly higher for nonvernacular girls than for vernacular girls, which, indeed, was the only significant difference produced in this set of post hoc comparisons (See Figure E.5).

Table E.14

Means and Standard Deviations of Syntactic Complexity in Dictation and Writing at Urban School (K-1) by Dialect and Sex

Dialect	Sex	Mean	S.D.
Vernacular			
	Male	5.96	2.70
	Female	4.75	2.49
Nonvernacular			
	Male	5.07	2.69
	Female	6.29	2.83

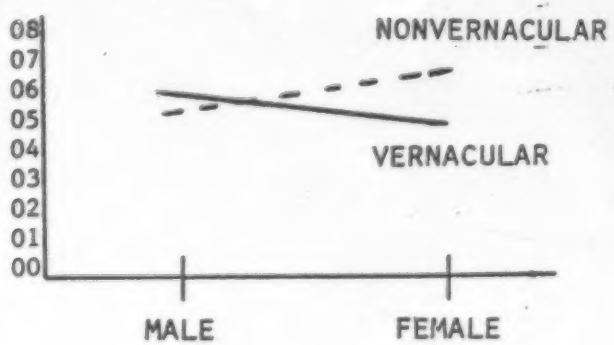

Figure E.5. Dialect as a Function of Sex in Dictation and Writing at Urban School (K-1)

Similar post hoc comparisons of syntactic complexity means (See Table E.15) for the significant mode by observation interaction showed that syntactic complexity of dictated texts decreased significantly

between observation one and observation two, but did not differ significantly between observations two and three or between observations one and three. Syntactic complexity in written testsm however, increased significantly between each observation and over all observations (See Figure E.6), but despite these increases, writing means for syntactic complexity remained significantly lower than dictation means (See Table E.15).

Table E.15

Means and Standard Deviations of Syntactic Complexity in Dictation and Writing at Urban School (K-1) by Observation

Mode	Observation	Mean	S.D.
Dictation			
	1	8.33	2.51
	2	7.15	2.52
	3	7.54	2.14
Writing			
	1	1.50	2.16
	2	3.19	2.95
	3	5.41	2.99
Observation Overall			
	1	4.92	2.34
	2	5.17	2.74
	3	6.48	2.57
Mode Overall:	Dictation	7.67	2.39
	Writing	3.37	2.70

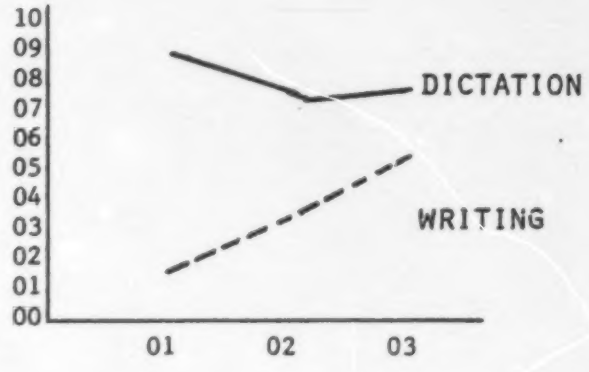

Figure E.6. Mode as a Function of Observation at Urban School (K-1)

Because syntactic complexity patterns for dialect, sex, and mode, interacted disordinally, no attempt will be made to interpret significant effects for the mode and observation factors.

Suburban school comparison: Design arrangements for this comparison were similar to those given above, the difference being the absense of a

Table E.16

ANOVA of Syntactic Complexity in Dictation and Writing at Suburban School by Sex, Mode, and Observation (K-1)

Source	df	MS	F	p. <
Between Subjects	13			
Sex (A)	1	5.46	.68	.42
S/A	12	7.99		
Within Subjects	70			
Mode (B)	1	114.99	43.87*	.001
Sex X Mode (AB)	1	1.99	.76	.40
SB/A	12	2.62		
Observation (C)	2	10.34	4.51**	.02
Sex X Observation (AC)	2	7.69	3.36**	.05
SC/A	24	2.29		
Mode X Observation (BC)	2	3.68	2.00	.15
Sex X Mode X Observation (ABC)	2	6.31	3.42**	.05
SBC/A	24	1.85		
TOTAL	83			

* Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 12) was significant at p. < .05.

** Geisser-Greenhouse conservative F test using reduced degrees of freedom (1, 12) was not significant at p. < .05.

vernacular population at the suburban school, leaving just sex as a between-subjects factor with mode and observation remaining as within-subjects factors. Only a significant test statistic for mode was obtained (See Table E.16). Note that the conservative F tests for the

Table E.17

Means and Standard Deviations of Syntactic Complexity in Dictation and Writing by Sex, Mode, and Observation at Suburban School (K-1)

Sex	Mode	Observation	$\bar{X}$	SD
Males	Dictation		8.50	1.43
		1	8.77	1.92
		2	8.36	.75
		3	8.36	1.66
	Writing		5.95	1.09
		1	6.02	1.71
		2	5.59	.94
		3	6.27	.22
Females	Dictation		8.08	1.70
		1	7.87	2.01
		2	7.0	.59
		3	9.28	1.63
	Writing		5.39	2.99
		1	3.53	3.25
		2	5.55	1.29
		3	7.10	3.31
Mode Overall:				
	Dictation:		8.29	1.56
	Writing:		5.68	2.23
Observation Overall:		1:	6.55	2.95
		2:	6.65	1.47
		3:	7.75	2.20

observation factor, the first-order sex by observation interaction, and the second-order sex by mode X observation interaction failed to reach significance. Tukey post hoc comparison of means for syntactic complexity were significantly higher for dictation than they were for writing (See Table E.17).

Summary: Text Length and Syntactic Complexity

Children wrote longer texts at each observation regardless of school, sex, or dialect. The picture is not as clear for dictation. In dictation no stable pattern for text length was discernable, owing largely to opposing fluctuations in means for boys and girls over observations both between and within schools. Typically, dictated texts decreased in length at the outset of second grade for boys but increased for girls. Yet, by the end of second grade at the urban school, boys and girls did not differ in the length of texts they dictated; at the suburban school they did with girls dictating longer texts than boys. Since the F values for interactions involving sex were usually marginal, interpretation of this urban-suburban reversal between boys and girls was too risky to attempt. Then too, variability in all calls was exceptionally high which further underscored the futility of trying to interpret dictation differences for text length.

Syntactic complexity was defined as mean number of words per T-unit. This measure was included as a dependent variable to provide other researchers a well-known basis for characterizing language development and for comparing these texts with those obtained in other studies of language development.

In general, syntactic complexity means were higher for dictation than for writing. Across observations, mean T-unit length in dictation

did not increase significantly; however, in writing mean T-unit length did increase significantly across observations. Again, a complex pattern of interactions characterized the differences between boys and girls for syntactic complexity. There was simply no basis for a reasonable interpretation of these patterns.